TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 20.] 1923. [No. 6.

MEDICAL ZOOLOGY.

WENYON (C. Morley). **Microscopic Parasites and their Carriers.**—Read before the Royal Institution of Great Britain, Weekly Evening Meeting, Friday, Mar. 3, 1922. 19 pp. With 9 figs.

A broad and instructive account, easy of assimilation by reason of the figures and ingenious diagrams that illustrate it, of the intestinal protozoa, of the malaria and piroplasma parasites, and of various types of trypanosomes and spirochaetes, and of the various vehicles and roads by which they are severally accommodated and passed from one vertebrate host to another. While keeping entirely clear of any suspicion of metaphysical hair-splitting, the author shows that it cannot be the natural interest of a parasitic species to do mortal hurt to its host, and therefore that the pathological aspects of parasitology are, like pathology in general, manifestations of the abnormal.

A. Alcock.

KUENEN (W. A.). **Amoebiasis ; Protozoology ; Role of the Helminths.**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. pp. 150–161.

In opposition to DOBELL the author agrees with those who regard the *minuta* form of *E. histolytica* as a harmless parasite—living on the surface of the intestinal epithelium, multiplying, and producing cysts—of the healthy resistant human "carrier." Should the healthy epithelial resistance break down, the *minuta* grows into the big, invasive, harmful *histolytica* form. One of the most frequent causes of this collapse is a concomitant or supervening infestation with worms, particularly hookworm. "In fighting endemic amoebiasis one will hardly have success unless at the same time energetic measures be taken against the spreading of helminthiasis."

A. A.

THOMAS (W. S.). **The Intestinal Protozoa in a Series of Three Hundred and Eighty-Two Patients.**—*Clifton Med. Bull.* New York. 1922. Oct. Vol. 8. No. 2. pp. 27–30.

This paper summarizes and discusses the results of systematic observations extending continuously over 27 months. Its aim is to show, by comparison of the latest with the earliest observations of the series, how untrustworthy the statistics of a beginner in this field are. The species found are those commonly known.

A. A.

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TANON (L.). **A propos de quelques progrès réalisés dans la thérapeutique des maladies à protozoaires.**—*Rev. Pratique des Maladies des Pays chauds.* Paris. 1922. Oct. Vol. 1. No. 1. pp. 18–24.

This is a preceptive paper for the behoof of medical men at home who nowadays come a good deal in touch with patients suffering from the diseases called tropical. It starts with the admission, gratifying to the apostles of Apollo and Æsculapius and Hygeia who labour in tropical fields, that the etiology and treatment of tropical diseases keep in pace together. Though devoted mainly to describing the treatment of bilharziasis initiated by CHRISTOPHERSON, it has something to say about the specific treatment of other specific diseases commonly prevalent in tropical latitudes. Apropos the treatment of amoebiasis by emetine associated with the name of ROGERS, it resuscitates some interesting historical facts, as that the famous PELLETIER and MAJENDIE isolated emetine in 1819 and proposed its use in the treatment of dysentery. But their emetine was not quite pure, and patients for experiment were scarce, so their suggestion was not followed up, although Lomasc BARTHOLEY revived it in 1829. As recent authors have remarked, emetine appeared before its time. The fact that Tull WALSH in 1891 recommended a combination of emetine and iodide of mercury as the proper treatment for dysentery is also mentioned.

[The facts that PISO, in 1648, explicitly stated that ipecacuanha was a specific cure for dysentery, and that Surgeon G. PLAYFAIR, of the East India Service, successfully attested the remedy in 1813, might also, perhaps, have been brought in.]

A. A.

IRIYE (Hideya). [**Experimental Studies on the Action of Emetin against Protozoas, in Special Reference to the Influence of the Reaction of the Solvent on its Action and the Mixed Administration of Emetin with some other Drugs.**]—*Nisshin Igaku* (*Progress in Med.*). 1922. May. Vol. 11. No. 9. [Summarized in *Japan Med. World.* Tokyo. 1922. Oct. 15. Vol. 2. No. 10. p. 300.]

In these experiments the lethal effect of emetine hydrochloride upon amoeba and paramoecium was strongest in an alkaline, weakest in an acid medium, an alkaline solution of 0·0005 per cent. being fully lethal; the effect of emetine was accelerated, in respective order, by arsenites, corrosive sublimate, and tartar emetic. The organisms mentioned could become tolerant of emetine by long-continued cultivation in a sufficiently dilute solution, the amoebae undergoing a correspondent change of form.

A. A.

HEGNER (Robert W.). **The Effects of Changes in Diet on the Incidence, Distribution and Numbers of Certain Intestinal Protozoa of Frog and Toad Tadpoles.**—*Jl. Parasit.* 1922. Dec. Vol. 9. No. 2. pp. 51–67. With 3 text figs.

The change from tadpole to frog normally involves among other things arrangements for a complete change of diet, and the author has thus discovered an ingeniously instructive field in the observation of the effects of this natural change on the intestinal protozoa of these

animals. He finds that *Rana clamitans* is infested with Opalina in the tadpole stage; that during metamorphosis the Opalinae first accumulate in the rectum, then resort entirely to the intestine, then disappear altogether; and that in the final full-blown frog they are not found at any time of life, not even, it would seem, by re-infection. With *Rana pipiens* and *Bufo lentiginosus*, however, infestation with Opalina is continuous from tadpole to full-blown and adult frog and toad. *Rana clamitans* (like the other species) is also infested with Nyctotherus, Trichomonas, and Hexamitus, but these do not disappear in the frog stage, and the infestation is probably continuous from tadpole to adult.

The author has also studied experimentally the effects upon the intestinal protozoa of feeding tadpoles on various gland-substances; the results are interesting and considerably suggestive, though they cannot at present be called definitely illuminative.

In one set of experiments he found that Opalina, Nyctotherus, Trichomonas, and Hexamitus decreased both in incidence and in numbers in tadpoles fed on thyroid—a substance that is known to influence the intestine itself. In another set of experiments he found that feeding on thyroid brought about a change in the distribution of the protozoa similar to the temporary change in distribution that occurs normally during metamorphosis, namely, that they were eliminated from (or diminished in) the rectum (their normal habitat) and accumulated in the intestine (which normally is almost free from protozoa).

The holozoic Nyctotherus and Trichomonas were found to decrease in incidence but to increase in numbers, and the osmotically-nourished Opalina and Hexamitus to decrease in incidence and in numbers, in tadpoles fed on thymus, ovarian, and testicular substance.

The author's main conclusion is that his experiments give countenance to the hypothesis that the intestinal protozoa are influenced not directly by what the host feeds on but indirectly by the effect of the food on the digestive tract of the host.

A. A.

Sokoloff (Boris). **Le noyau est-il indispensable à la régénération des Protozoaires ?**—*C.R. Soc. Biol.* 1922. Dec. 2. Vol. 87. No. 36. pp. 1144–1147. With 1 text fig.

Amputated fragments of Dileptus and Bursaria not containing nucleus recovered the specific contour but did not live long; in some of the amputated pieces (of Bursaria) thus recovering shape small fragments of chromatinic origin were disseminated. The author's conclusion is that the nucleus is necessary for vital activity but not for partial regeneration.

A. A.

Blanchard (M.) & Lefrou (G.). **La recherche des parasites sanguicoles extraglobulaires par la méthode de la triple centrifugation du sang.** —*Presse Méd.* 1922. Nov. 25. Vol. 30. No. 94. pp. 1020–1021.

An advocacy of the method of triple centrifugation for the collection of extra-corpuscular blood-parasites.

Of the blood to be examined 10 cc. is well mixed with 1 cc. of a 20 per cent. sodium-citrate solution and is then centrifugated for

about 10 minutes to separate the mass of the red cells. The plasma is decanted and submitted to a second centrifugation for 10 minutes; in the sediment of this second operation will be found, along with a few red cells and haematoblasts, the leucocytes, any microfilariae, and (in heavy infections) some trypanosomes. The plasma of the second operation is then decanted and centrifugated for a third time of 10 minutes; in the sediment of this third operation will be found, along with a few remaining blood cells, any trypanosomes and spirochaetes that are present, and, possibly, cocci and bacilli. At Brazzaville the examination of blood by triple centrifugation is a part of the routine.

A. A.

Rodrigues (Sebastian L.). **The Rationale of the Treatment of Protozoal Diseases by Organic Acid Salts.**—10 pp. [Printed proof supplied by Author, Nov. 13, 1922.]

"On the theory that at blood-heat organic acid salts have been found to act as lethal katabolic toxins to some protozoal parasites," the writer recommends that such salts should be generally used in the treatment of diseases due or supposed to be due to protozoa.

A. A.

Hegner (Robert W.) & Becker (Elery R.). **The Diagnosis of Intestinal Flagellates by Culture Methods.**—*Jl. Parasit.* 1922. Sept. Vol. 9. No. 1. pp. 15–23.

Since the Chilomastix, Trichomonas, Embadomonas, and Enteromonas that occur in the human intestine are easily cultivated in a mixture of egg albumin and normal saline solution, the authors recommend the examination of stools by the culture method rather than the smear method.

A. A.

Shortt (H. E.). *Herpetomonas Ctenocephali,* **Fantham; Some Observations on its Life History and Reactions to Different Environments.**—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 721–738. With 3 plates & 2 text figs.

The purpose of the study of this extremely convenient flagellate is to clear the way for its employment in the experimental investigation of herpetomonad infections of vertebrates. The paper is therefore well worth attention, particularly as it specifies certain fallacious micro-organisms that may be encountered in the gut of the flea.

The author cannot confirm for the dog-flea the general statement issued by some observers that pure culture of the flagellates of fleas is facilitated by any freedom of the gut of the flea from bacteria. For pure culture females (for greater convenience) are washed in 10 or 12 changes of sterile normal citrate saline solution and are then removed under sterile conditions to flamed slides for individual dissection. The alimentary tract being removed, by separating the terminal segments of the abdomen, inspection of the hindgut and rectum, if these parts are distended and have a "ground glass" appearance, gives evidence of a heavy infestation with flagellates. The infested parts are removed with a capillary pipette and washed in several changes of the citrate saline, and their contents are then pipetted and sown in several tubes of N.N.N. medium—all operations,

of course, being sterilized ; in some of these tubes a pure culture will occur, for subculture The observed optimum temperature for growth was 22°–24° C. ; active forms were abundant after 48 hours, and after 7 days the water of condensation was creamy with them. Successful cultures were obtained in other media, even in ordinary agar, without any blood but with merely a few drops of normal citrate saline.

The various forms of *H. ctenocephali* found in the flea's gut are described and figured, non-flagellate forms occurred only in the rectum.

Bed-bugs were fed on cultures (or flea-guts) mixed with citrated blood. After 24 hours enormous numbers of active flagellates could be found in the bug's stomach ; but by the eighth day very few remained, though a few could still be found in its hindgut. By following a modification of the method of Cornwall and Le Frenais in their study of the kala azar parasite, " thick tails " could be produced.

Snake-venom (cobra and Russell's viper) in half per cent. solution had no immediate lethal effect on *H. ctenocephali*.

Cultures of *H. ctenocephali* ingeniously introduced into small pockets of living *Euphorbia royleana* and secured from evaporation multiplied there and produced the peculiar elongate, slender, twisted, posteriorly-tapering forms usually characteristic of Euphorbia flagellates ; they did not, however, spread beyond the site of inoculation.

Normal blood-serum of monkeys (Macacus) was found to be distinctly lethal to *H. ctenocephali*, and the serum of a monkey that had had a long course of inoculations with cultures of the flagellate was more quickly fatal than other specimens of monkey serum.

Of other micro-organisms found in fleas infected with Herpetomonas, *Nosema pulicis* (which may be found even in the salivary glands) is particularly mentioned.

A. A.

Lynch (Kenneth M.). **Cultivation of Trichomonas from the Human Mouth, Vagina, and Urine.**—*Amer. Jl. Trop. Med.* Baltimore. 1922. Nov. Vol. 2. No. 6. pp. 531–538.

The author describes the various simple media that have been used for the cultivation of Trichomonas of human source and states that the uniformly best of them is " human blood-serum diluted with ten volumes of 0·5 per cent. NaCl solution." In this medium growth usually is steadily progressive for four or five days, but very soon after that the organisms disappear. Growth goes on best at the bottom of a fairly long tube of the medium.

The author is of opinion that *T. vaginalis* and *T. buccalis* are identical.

A. A.

Hogue (Mary Jane). **A Study of *Trichomonas hominis*, its Cultivation, its Inoculation into Animals, and its Staining Reaction to Vital Dyes.**—*Bull. Johns Hopkins Hosp.* 1922. Dec. Vol. 33. No. 382. pp. 437–440. With 4 figs.

An excellent medium for cultivation of *Trichomonas hominis* is sodium-chloride serum-water. Dilute one part of (preferably) sheep-serum with three parts of distilled water and sterilize at 100° C. for one hour on three successive days. Add 10–15 cc. of this serum-water to 100 cc. of 0·85 per cent. sterile NaCl. solution. Inoculate

the depths of a test tube containing 15 cc. of the medium with Trichomonas by means of a capillary pipette, and cover the surface with sterile paraffin oil to prevent evaporation. Incubate at 36° C. Such cultures will live for 35–66 days. In this medium with a pH 8 the organism multiplies most rapidly, and with a pH 7·2–7·4 lives longest.

A. A.

Simon (Charles E.). **A Critique of the Supposed Rodent Origin of Human Giardiasis.**—*Amer. Jl. Hyg.* Baltimore. 1922. July. Vol. 2. No. 4. pp. 406–434. With 1 plate, 3 figs. & 6 charts.

This is a paper to which it is hardly possible to do justice in the short space allowable to a review; and all interested in the subject with which it deals are therefore recommended to study the original, which evidently embodies the results of much careful work. The author's chief arguments and conclusions may be shortly summarized as follows.

As is well known, representatives of the flagellate genus *Giardia* (better known as *Lamblia*) occur in many different vertebrates. The author has made an intensive study of three of them—that in man (which is here called *G. lamblia*), that in the common mouse and rat (*G. muris*), and that in field-voles or "meadow mice" (*G. microti*). On grounds furnished by a cytological, biometric, and experimental study of these forms, the author comes to the conclusion—which appears well founded—that they represent three distinct and "good" species. He believes that they can be distinguished by means of slight morphological differences observable in the active flagellates—though little diversity can be detected in their cysts—and by means of their relative and absolute dimensions. *G. lamblia* [=*G. intestinalis*] is comparatively large and slender, *G. muris* small and plump, while *G. microti* appears to be somewhat intermediate in size and shape. *G. muris* was found in laboratory mice and rats, but never in wild ones [which seems curious, since it undoubtedly occurs in these animals in other parts of the world]. *G. microti* was studied in the Californian vole (*Microtus californicus*) and in a Nova Scotian species identified as *M. pennsylvanicus acadicus*. This species of Giardia is probably identical, in the author's opinion, with the form long ago recorded from the Italian vole "*Arvicola arvalis*" by Grassi, and with that more recently found in Italy by Splendore in *Pitymys savii*, and by him named "*G. pitymysi*." The biometric evidence for regarding "*G. lamblia*," *G. muris*, and *G. microti* as specifically distinct from one another is exhibited in a series of tables and curves.

The experimental evidence for regarding these three species as distinct appears to clinch the matter. It was found, by carefully conducted experiments, that *G. muris* could be readily transmitted from mouse to mouse, from mouse to rat, and from rat to rat. Wild mice and rats (invariably found, as noted already, uninfected in nature) were easily infected experimentally with material from infected laboratory-bred animals. Experiment showed, however, that it was apparently impossible to infect wild mice and rats, or laboratory rats, with *G. microti* (from wild voles).

Perhaps even more interesting were the author's experiments with the Giardia of man. By feeding the cysts of this species to wild and laboratory-bred rats, attempts were made to infect these rodents with the species normally living in man; but in every case the result

was entirely negative. None of the rats became infected, and—which is noteworthy also—"none of the animals showed any signs of sickness, viz., diarrhoea." The author's results were thus, as he says, "diametrically opposed" to those reached by FANTHAM, PORTER, and DESCHIENS [and, it may be added, by several other workers], who have recorded positive results from similar experiments.

From all his studies the author finally reaches the general conclusion that "there is no basis for the assumption that the human infection [with Giardia] is referable to either rats, mice, or meadow mice" [though his experiments actually prove, directly, a converse proposition —that the rat cannot be infected with the Giardia of man]; and he gives it as his opinion, consequently, that "human giardiasis is not of rodent origin, so far as the mouse type is concerned," and that "the human infection is of human origin" [an inference in support of which no experimental evidence is here adduced]. With these general conclusions many protozoologists—especially those who, like the reviewer, have already expressed similar opinions—will doubtless find themselves in essential agreement: and it seems worth adding that, if these conclusions are correct—as there is every reason to believe they are—then they effectively demolish all the experimental evidence hitherto advanced in favour of the hypothesis that the Giardia of man is a pathogenic parasite, since its pathogenic effects (if it is capable of producing any) obviously cannot be demonstrated in a host—such as a mouse—which is, in reality, incapable of acquiring an infection.

[In the opinion of the reviewer this paper is a valuable experimental contribution to a question which has hitherto been considerably vitiated and confused by lack of accurate data, and a superfluity of ill-founded deductive reasoning and premature speculation.]

Clifford Dobell.

i. HEGNER (Robert W.). **The Systematic Relationship of *Giardia lamblia* Stiles, 1915, from Man and *Giardia agilis* Kunstler, 1882, from the Tadpole.**—*Amer. Jl. Hyg.* Baltimore. 1922. July. Vol. 2. No. 4. pp. 435–441. With 3 text figs.

ii. ——. **A Comparative Study of the Giardias living in Man, Rabbit, and Dog.**—*Ibid.* pp. 442–454. With 14 text figs.

i. In this paper the author describes a species of *Giardia* occurring in the tadpoles of frogs, and compares it with that found in man. He identifies the former with *G. agilis* Kunstler, and adopts the designation *G. lamblia* Stiles for the latter.

G. agilis was obtained from the larvae of *Rana clamitans*, collected at Chester, Nova Scotia, in June and July. Measurements of 100 stained flagellates from 17 tadpoles lead the author to the conclusion that the mean length of *G. agilis* is 22μ, its mean width 4·5μ. The dimensions of the flagellates in different tadpoles, however, were found to differ considerably—a fact which the author explains by suggesting that "heritably diverse races of *G. agilis* may exist with respect to size, or else size may be influenced by different environmental conditions in the intestines of different hosts." [As not more than 15 individuals appear to have been measured from any one tadpole, the statistical basis for any inference regarding the existence of races seems very insecure.] The measurements obtained are compared with those of the Giardia of man, as given by SIMON (*Amer. Jl. Hyg.* (1921), i. 440).

As a result of his observations and comparison, the author decides that *G. agilis* is morphologically sufficiently like the species occurring in man to be placed in the same genus, but not sufficiently unlike to warrant its being put in a separate subgenus—as proposed recently by REULING and RODENWALDT (*Arch. f. Protistenk.* (1921), xlii, 337). [His conclusion thus agrees with that of ALEXEIEFF (1914), which has hitherto been generally accepted by protozoologists.]

ii. This paper contains a redescription of the species of *Giardia* commonly found in the rabbit and the dog, and a comparison of them with the form found in man. Material was obtained from laboratory rabbits [number not stated] and four puppies—all the latter being found infected; while, for his human material, the author apparently relied upon the figures published by SIMON (1921)—referred to above.

In the opinion of the author the three forms of Giardia studied—from rabbit, dog, and man—present slight but constant differences from one another as regards their structure and dimensions. [It may be noted that apparently only 50 individuals were measured from one rabbit, and a like number from dogs; while the measurements so obtained are contrasted with the much larger number (342) made by SIMON on the species from man.] As a result of his observations the author concludes that the three forms occurring in man, the rabbit, and the dog, represent three distinct species, which he names respectively *G. lamblia* Stiles, 1915, *G. duodenalis* Davaine, 1875, and *G. canis* sp. nov. [The possibility that *G. duodenalis* may be the same species as occurs in other rodents is not discussed; and no attempt seems to have been made to infect dogs with the rabbit's "species," or the rabbit with the dog's, or either of these hosts with the Giardia of man. In view of the author's own hypothesis (*cf.* (i) *supra*) that a species of Giardia may consist of several "heritably diverse races," which differ in their dimensions, the few measurements which he here records—unsupported by any experimental data—appear scarcely adequate to prove his conclusions, notwithstanding that they may well be, as others before him have supposed, substantially correct.]

Clifford Dobell.

i. DA CUNHA (Aristides Marques) & MUNIZ (Julio). **Parasitismo de "Trichomonas" por "Chytridacae" do genero "Sphaerita" Dangeard.**—*Brazil-Medico.* 1923. Jan. 13. Year 37. Vol. 1. No. 2. pp. 19–20.

ii. ZOTTA (G.). **Emploi de la substance cérébrale comme milieu de culture pour le** *Leptomonas pyrrhocoris.*—*C.R. Soc. Biol.* 1923. Feb. 3. Vol. 88. No. 4. pp. 281–283.

iii. ——. **Culture du** *Leptomonas pyrrhocoris* **en milieux d'organes stérilisés.**—*Ibid.* pp. 283–285.

iv. CHATTERJEE (G. C.). **A New Flagellate Parasitic in the Human Intestinal Canal.**—*Indian Jl. Med. Res.* 1922. Oct. Vol. 10. No. 2. pp. 523–525. With 1 plate.

v. FAUST (Ernest Carroll). **Notes on** *Embadomonas sinensis*, **Faust and Wassell, 1921.**—*Jl. Parasit.* 1922. Sept. Vol. 9. No. 1. pp. 33–34. With 1 plate.

vi. LEGER (Marcel). **Formes crithidiennes observées chez** *Lyperosia thirouxi*, **Roubaud.**—*C.R. Soc. Biol.* 1922. June 17. Vol. 87. No. 22. pp. 134–136.

i. In interpreting remarkable phenomena observed in Trichomonas and other Protozoa the existence of Sphaerita parasites should not be forgotten.

ii. 100 gm. of perfectly cleaned calf-brain brayed to a broth with powdered glass is shaken up with 200 cc. of 0·75 per cent. of physiological serum, and the mixture is filtered, heated for 20 minutes to clot and precipitate gross suspensions, decanted, and distributed in tubes for use after sterilization. The slightly opalescent fluid, having a PH. index 6·9, gives rich cultures of *Leptomonas pyrrochoris* in four days.

iii. *Leptomonas pyrrochoris* also grows with great vigour in a sterilized medium of small fragments of spleen, or liver, or kidney (of calf or ox) in 0·6–0·75 per cent. physiological serum.

iv. A flagellate with eight flagella arranged in a ring, observed in a dysenteric stool. [Might possibly be a dividing form of Enteromonas ?]

v. A dozen figures of this species are here exhibited. "In general, the specific characters of *E. sinensis* agree with those of *E. intestinalis*, although differences are apparent."

vi. In a very fatal epidemic of horse-sickness at Dakar the author found in the stomach of one of 50 individuals of Lyperosia examined, numerous crithidiform flagellates active among ingested red cells like those of the horse. Whether these flagellates were proper to the fly or were a phase in the life of a parasite of the horse is left an open question.

A. A.

SENEVET (G.) & WITAS (P.). **Evolution spontanée de l'infection à *Haemoproteus columbae*, chez un pigeon isolé à partir du premier mois de son existence.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 787–789.

An interesting account of the behaviour of Haemoproteus in a pigeon carefully protected from any risk of reinfection.

When first taken under observation on September 27, 1920, 900 very small parasites were found in 100 fields, and the number increased more than six-fold in the course of ten days, after which they increased in size and rapidly decreased in number until on January 23, none could be found at all.

On February 4, very small parasites reappeared and increased in number (570 in 100 fields) until the 14th. Then again they began to increase in size and to diminish in number until on March 26 none could be discovered.

On August 19 the small parasites appeared again and increased in number in the course of ten days (640 in 100 fields), and then again increased in size and diminished in number until on September 5 there was none.

All this time the bird's blood was examined almost every day.

Since September 5, 1921, no parasite has been seen in examinations made twice a week up to October 5, 1922.

A. A.

LEGER (Marcel) & BÉDIER (E.). *Plasmodium* **du Lérot,** *Myoxus murinus* **Desmarest.**—*C.R. Soc. Biol.* 1922. Dec. 23. Vol. 87. No. 39. pp. 1336–1337.

Report of the discovery in the blood of a dormouse (*Myoxus murinus*), at Senegal, of an endoglobular parasite at first in forms suggestive of some sort of Piroplasmid, and afterwards in amoeboid forms, some of which exactly resemble *Plasmodium tenue*. None of the forms, however, contained any pigment. The blood of the dormouse also contained the well-known Grahamella parasite of rodents.

A. A.

LEGER (Marcel) & BÉDIER (E.). *Plasmodium* **d'un Mustélidé,** *Ictonyx zorilla,* **du Sénégal.**—*C.R. Soc. Biol.* 1923. Feb. 17. Vol. 88. No. 6. pp. 422–424. With 1 fig.

Plasmodium roubaudi, discovered by the authors in *Ictonyx zorilla,* resembles *P. malariae* in its compact and deeply pigmented protoplasm and its sluggishness, and in not affecting the size of the parasitized red-cell; it also shows some tendency to assume the "equatorial" position in the red cell.

A. A.

ANNALES DE MÉDECINE ET DE PHARMACIE COLONIALES. 1921. Jan.–Feb.–Mar. Vol. 19. No. 1. p. 116.—**Mégalosplénie et hémogrégarine en Afrique équatoriale.**

LEBOEUF reports a case of a spleen so enlarged as to give the patient —an African woman of about 35 years—the appearance of a multiparturient at term. Attacks of fever were frequent, but there was no enlargement of the liver and no cachexia. LEBOEUF compares this case with that of a Congo girl in whose spleen he found, by puncture, an organism like ROUBAUD's *Haemogregarina inexpectata.*

A. A.

NATTAN-LARRIER (L.). **Sur une hémogrégarine de l'homme (Note préliminaire).**—*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 943–947.

In this case, a man of 31, the infection probably originated in Equatorial Africa; but as the patient also suffered from malaria, and had a concomitant trypanosome infection as well, it is impossible to conjecture which among the many symptoms and pathological phenomena here very fully recorded are attributable to the haemogregarine discovered in his blood. The author, however, emphasizes a peculiar eruption of ill-defined rosy papules. (ROUBAUD, in an appended note, mentions rashes as having occurred in his Congo case (*H. inexpectata*), and underlines also a general mononucleosis).

The haemogregarines, which were found in abundance, more resembled *H. elliptica* Sergents & Parrot than any of the other species hitherto reported in human blood. *H. equatorialis* is the name given.

A. A.

NOC (F.). **Formes hémogrégariniennes observées dans un cas d'anémie pernicieuse autochtone.**—*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 936–943. With 1 text fig.

Case of a man of 59 who had never been in the colonies or in contact with colonials, and had never been ill until he now came under observation for an undetermined fever that had lasted for some months. The liver and spleen were enlarged, but not the lymphatic glands. All possible causation having been exhaustively considered, the blood, which was extremely fluid and deficient in haemoglobin, was examined microscopically. The number of red cells was 1,500,000, and among them were a large number of nucleated cells

of normoblast type ; the number of leucocytes was about 5,000–6,000, the percentage of polymorphs being very greatly decreased and the percentage of lymphocytes enormously increased. Malaria parasites could not be detected ; but a haemogregarine was found on several occasions. The first discovered was crescent shaped, with a recurved mucronate tip, and it appeared to be attached along with some blackish granules to a tattered red cell. The next discovery was a vermicular form, and then dividing forms (binary with residual mass). Further investigation was precluded by the patient's death.

The haemogregarine is compared with those previously found in man, and is adjudged to be a new species with the title *H. gallica*.

A. A.

Leger (Marcel) & Bédier (E.). **Hémogrégarine du Cynocéphale ; *Papio sphinx* E. Geoffroy.**—*C.R. Soc. Biol.* 1922. Oct. 14. Vol. 87. No. 29. pp. 933–934.

Description of a variety of *H. cynomolgi* Langeron found in the Senegal baboon (*Papio sphinx*).

A. A.

Dobell (Clifford). **The Discovery of the Coccidia.**—*Parasitology.* 1922. Dec. Vol. 14. Nos. 3 & 4. pp. 342–348.

One could not profane this pious tribute to the ancestral shrine of the protozoologists by any sort of "abstract." The author, earnestly searching among the archives of the Royal Society, has already discovered for us an irresistible picture (anno 1681) of the great Leeuwenhoek, with his homely lenses, deep in the study of *Giardia intestinalis* [see this *Bulletin*, Vol. 16, p. 89] ; and now, devoting himself still to the same venerable sources, he shows us the same great serene Original (anno 1674) meditating upon the "oval corpuscles" —no other than the bodies known to future generations as oocysts of *Eimeria stiedae*—floating in the bile of a rabbit. It has been for the author a pleasant duty ; and it is well done.

A. A.

Connal (A.). **Observations on the Pathogenicity of *Isospora hominis*, Rivolta, emend Dobell, based on a Second Case of Human Coccidiosis in Nigeria ; with Remarks on the Significance of Charcot-Leyden Crystals in the Faeces.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. Oct. 19. Vol. 16. No. 4. pp. 223–245.

This paper has a quite outstanding and permanent value, since it contains not only a singularly complete account of a carefully observed case of coccidial infection in man, but also a critical analysis of most if not all of the instances of the same kind of infection that have been published—not to mention the list of references to the original publications.

The case here so luminously utilized is thought to have been an exceptionally massive infection. The patient was an educated European, 40 years of age, living at the time in West Africa ; the infection was the result of an accident in the laboratory.

The incubation period was 6 days ; the onset of symptoms (on the seventh day) was sudden ; the duration of infection (from the date of the accident to the final disappearance of oocysts) was 40 days, and cure was spontaneous, since only urgent symptoms were treated.

The signs and symptoms were diarrhoea, abdominal discomfort, flatulence, lassitude and loss of weight. The remarkable feature in the faeces, which were systematically examined, was the large amount of undigested matter, particularly fat.

Oocysts were not found in the stools, though searched for daily, until 22 days after onset of symptoms (28 days after accident of infection) ; they were persistent for the 9 days immediately following, could not be found on the tenth day, reappeared on the next two days, and were not found afterwards. Charcot-Leyden crystals appeared and disappeared with the oocysts.

Acute signs of illness abated within a week of the finding of oocysts. Apart from *Isospora hominis*, no cause of illness could be detected.

From his personal observations, and the investigation of recorded cases, the author concludes that although sometimes—particularly in the instance investigated, where the infection was considered to be massive—*Isospora hominis* is pathogenetic for man, it may not, and in the majority of cases probably does not, cause manifest disturbance.

A. A.

Newham (H. B.) & Robertson (Andrew). **A Case of *Isospora hominis* (Rivolta), Dobell, probably contracted in Durban, South Africa.**—*Jl. Trop. Med. & Hyg.* 1922. Nov. 1. Vol. 25. No. 21. pp. 344–345.

Two cases of infestation with *Isospora hominis* are mentioned in which infection probably took place in Portuguese East Africa, but the case recorded is one in which infection probably occurred in South Africa. The first symptom observed was " dysentery," probably acute diarrhoea. The stool in which the oocysts were detected was soft, and contained also numerous Charcot-Leyden crystals and a few *Chilomastix mesnili*, but not any blood, mucus, pus, or Entamoebae. It is noted that in the cases of Isospora infection reported by Noc, Haughwout, and Connal & Young, Charcot-Leyden crystals were found.

A. A.

Thomson (J. G.) & Robertson (Andrew). **A Case of Human Infection with *Eimeria oxyspora*, Dobell, 1919.**—*Jl. Trop. Med. & Hyg.* 1922. Dec. 1. Vol. 25. No. 23. pp. 369–371.

The patient in this case had a very heavy infection of *Giardia intestinalis*, and a history since 1918 of recurrent diarrhoea. Only a small quantity of a single stool was available for examination, and it possibly had admixtion of urine ; it was dark, mostly fluid, loaded with oxalates and phosphates, and contained cysts of Giardia and oocysts of Eimeria. The authors describe the oocysts and compare them with the original descriptions of the oocysts of *E. oxyspora* and *E. snijdersi* and with the oocysts identified as *E. oxyspora* by Broughton-Alcock & Thomson in 1921 [see this *Bulletin*, Vol. 19, p. 468]. Finally they conclude that the discrimination of *E. snijdersi*

from *E. oxyspora* rests upon a slight difference in the size of the sporocysts and on the fact that some of the sporocysts of the former species have sharper ends ; differences which, in their opinion, hardly justify a specific distinction, especially when the vicissitudes undergone by the specimens distinguished as *E. snijdersi* are considered.

A. A.

Guyénot (Em.), Naville (A.) & Ponse (K.). **Une Larve de cestode parasitée par une microsporidie.**—*C.R. Soc. Biol.* 1922. July 22. Vol. 87. No. 27. pp. 635–637.

In snakes of the species *Tropidonotus natrix*, at Bologna, the authors frequently find, encysted in the connective-tissue, muscles, and peritoneum, the larvae of a Cestode probably appertaining to the genus Ligula. Some of these larvae are themselves parasitized by a Microsporidium, and the authors speculate on the possibility of this infection spreading to the snake.

A. A.

Bode (Paul). **Ueber das** *Balantidium coli hominis* **(Malmsten) und die bei dieser Art beobachteten Knospungsvorgänge.** [*Balantidium coli* and the Budding Process observed in this Species.]—*Cent. f. Bakt.* 1. Abt. Orig. 1923. Jan. 30. Vol. 89. No. 7–8. pp. 285–292. With 8 text figs.

This is a long but not particularly logical argument against the identity of the Balantidium of the pig with *Balantidium coli* of man. According to the author's own observations—which are confirmatory of the recorded observations of Ekecrantz (1869), Ortmann (1891), and Roos (1893)—the Balantidium of man multiplies by budding from its hinder end, whereas, according to Leuckart and others, the Balantidium of the pig multiplies in the common Ciliate way by transverse fission. [The author's figures show a small nucleated mass protruding and finally separating from that part of the body where in the Balantidium of the frog the anus appears. The author also quotes Shegalow as having observed both proliferation and ordinary fission when examining Balantidium both of the pig and of man ; but remarks that Shegalow does not mention any specific restriction of either process.]

A. A.

Ghosh (Ekendranath). **On a New Ciliate,** *Balantidium ovatum*, **sp. nov., an Intestinal Parasite in the Common Cockroach** (*Blatta americana*).—*Parasitology.* 1922. Dec. Vol. 14. Nos. 3 & 4. p. 371. With 1 text fig.

Balantidium ovatum, a new species from the intestine of *Blatta americana* (a common cockroach), is here characterized and roughly figured. It is quite distinct from *B. blattarum*. [A Balantidium was observable some years ago in common cockroaches (*Blatta orientalis*) at Belvedere, Kent.]

A. A.

Logan (A. H.). *Balantidium coli* **and Pernicious Anemia : Report of Four Cases.**—*Amer. Jl. Med. Sci.* Philadelphia. 1921. Nov. Vol. 162. No. 5. pp. 668–674.

This article is of a speculative type. The brief records of the four cases do not sufficiently justify the assumption that the pernicious anaemia was due to *Balantidium coli* and " its haemolytic agent."

A. A.

i. Franchini (G.). **Sur une amibe particulière d'une Asclépiadacée (*Chlorocodon Whitei*).**—*Bull. Soc. Path. Exot.* 1922. June 14. Vol. 15. No. 6. pp. 393–398. With 3 figs.

ii. ——. **Sur une amibe de la laitue (*Lactuca sativa*).**—*Ibid.* 1922. Nov. 8. Vol. 15. No. 9. pp. 784–787. With 1 text fig.

iii. ——. **Essais d'inoculation de différents protozoaires dans le latex des euphorbes.**—*Ibid.* pp. 792–795. With 2 text figs.

iv. ——. **Protozoaires de Muscides divers capturés sur des euphorbes.**—*Ibid.* 1922. Dec.13. Vol. 15. No. 10. pp. 970–978. With 4 figs.

v. ——. **Essais d'inoculation au chat, d'amibes du latex de plantes.**—*Ibid.* pp. 931–933. With 1 text fig.

vi. ——. **Essais d'inoculation aux souris blanches du latex parasité de différentes espèces d'euphorbes.**—*Ann. Inst. Pasteur.* 1922. Dec. Vol. 36. No. 12. pp. 873–881. With 6 text figs.

vii. ——. **Action du latex d'Euphorbes sur différents trypanosomes. Culture de flagellés dans des latex divers.**—*Bull. Soc. Path. Exot.* 1923. Jan. 10. Vol. 16. No. 1. pp. 41–50.

i. The author has already described an amoeba (associated with a Crithidia) from the sap of the Asclepiad *Cryptostegia grandiflora*, and he now describes and figures another species of amoeba from another Asclepiad —*Chlorocodon whitei*—this species being associated with small trypanosomes and small oval bodies which may be developmental forms of trypanosomes.

The amoeba, which is capriciously polymorphic, can be cultivated on Nöller's medium; it has not been observed to ingest red blood cells or bacteria.

ii. Here is described, with 23 figures in the text, an amoeba found at Bologna in the sap of the lettuce, and amenable to culture on Nöller's blood-medium, from which it sometimes ingested red blood cells, though it digested them somewhat reluctantly. The author refers to the lettuce-amoeba described by Musgrave & Clegg in Manila, found on the leaves of the plant, the injection of cultures of which into three monkeys was followed by the appearance of dysentery in two of them.

iii. Having, in collaboration with Laveran, infected two species of Euphorbia with cultures of *Herpetomonas ctenocephali*, the author has continued his experiments in the same direction and now reports the successful infection of *Euphorbia geniculata* with cultures of *Herpetomonas muscae-domesticae* and of *Euphorbia ipecacuanha* with cultures of kala azar of Indian origin. Attempts to infect various species of Euphorbia with cultures of Oriental sore were practically unsuccessful ("negatifs ou presque"), and of flagellates of the Pentatomid bug, *P. ornatum*, were completely unsuccessful.

iv. Many Muscids harbour parasitic protozoa—flagellates, leishmania and gregarines—and spirochaetes in their gut, and this paper relates to those found in the gut of Muscids captured on Euphorbias. The flagellates of some of these Muscids resemble those occurring in the sap of certain Euphorbias, and it is surmised that in such cases the plants may be infected from the flies' faeces, particularly as the author has succeeded in infecting Euphorbias with cultures of kala azar.

v. Three cats received rectal injections of cultures of amoebae of plant origin, in two cases from dog-banes (Apocynaceae), in one case from *Ficus carica*. In the last case there were no obvious effects; but in the first two cases the animals after respective intervals of 5 and 10 days became decidedly ill, passed blood-streaked mucosities or bloody flux, as well as amoebae with red blood cells in their protoplasm and small cyst-like forms, but recovered their health completely, the one in about 11 weeks, the other in about a month. The various amoeba-forms are figured.

vi. Of 30 mice inoculated in the peritoneum with latex of different species of Euphorbia containing trypanosomes and scanty amoebae, only seven have hitherto exhibited any parasites in the peripheral blood.

At autopsy scanty leishmaniform and flagellated parasites were found in different organs of these seven mice; in one of the seven, which was inoculated from *Exoecaria emarginata*, the parasites were free but occasionally endoglobular. Cultures (on Nöller's medium) of blood from heart, spleen, and liver of these mice have produced a large number of round and oval forms, small and large trypanosomes, etc., and also active amoebae, some of which had ingested the red blood cells of the medium.

vii. Records experiments with *Trypanosoma evansi, soudanense, brucei, lewisi*, and *gambiense* brought, severally, in contact with sap of various species of Euphorbia; the observed result was that these different species of Trypanosoma lived longer in contact with Euphorbia juice than in contact with physiological or with citrated solution. In every experiment the trypanosomes were added to the respective medium in their native blood.

Further experiments in the culture of Herpetomonas, Leishmania, and Trypanosoma in the sap of Euphorbias, Asclepiads, Apocynaceae, Ficus, and other plants are recorded. Some of the organisms grew well both in latex-bouillon and in pure sap; the most generally successful of all was *Herpetomonas pyrrhocoridis*, which sometimes underwent transformations never observed in its bug host, its body becoming twisted, or ovally dilated at the anterior end. *Herpetomonas ctenocephali*, on the other hand, would not grow in any of the saps attempted. Leishmania grew well enough in Euphorbia sap, some of the forms assumed by it being singularly large and round, and having several nuclei and centrosomes.

A. A.

Ashworth (J. H.). **On *Rhinosporidium seeberi* (Wernicke, 1903), with Special Reference to its Sporulation and Affinities.**—*Trans. Roy. Soc. Edinburgh.* 1923. Vol. 53. Part 2. No. 16. pp. 301–342. With 12 figs and 5 plates.

The material for this study of Rhinosporidium was supplied from an infected patient who was under the author's observation in Edinburgh for more than four years. The material, therefore, was examined both in its living state and after fixation under superlative conditions.

The patient is a young adult native of Cochin who became aware of a growth in his naso-pharynx—which impeded his swallowing and breathing and caused inconvenience by a profuse discharge of viscid mucus and occasional epistaxis—between two and three years before he went to Edinburgh, and had had the growth removed once, and once again after recurrence, while he was in India. During the eight years that he was in Edinburgh he underwent eleven operations for relief, until finally the Rouge operation was performed in hope of a radical cure. A summary of the case appeared in the *Journal of Laryngology and Otology* for 1921 and a sequel is promised for this current year.

The historical part of the study reminds us that Rhinosporidium was discovered independently in Argentina by Seeber, who published his account of it in 1900, and in Bengal by O'Kinealy, whose material (along with that from another Indian case) was examined and described (in 1905) by Minchin and Fantham, after O'Kinealy himself had published some account of the case in 1903. Seeber, whose discovery was forgotten until he republished it in 1912, regarded the organism as a Coccidium, though he realized that it differed from all Coccidia except *Coccidioides immitis* which has been shown to be a fungus; Minchin placed it in a suborder of the Haplosporidia. In the historical part is also to be found an ample record of other cases, including their locality (several places in Madras,

also Ceylon, and Tennessee), and the sites infected (nasopharynx usually, but also conjunctiva, lacrimal sac, aural meatus, and penis); and also a notice of *Rhinosporidium equi* observed in 1913 by ZSCHOKKE in the nasal septum of a horse at Pretoria.

The conspicuous result of the author's own investigations is to show that the affinities of Rhinosporidium are not with the Coccidia, or with the Haplosporidia, or, as BEATTIE suggested, with the Sarcosporidia; but with the fungi of the *Phycomycetes* order (in which the thallus is formed of a single cell), and suborder *Chytridineae* (in which the mycelium is absent and the spores are usually non-sexual), and provisionally with the family *Olpidiaceae* (in which the trophic stage is spherical or subelliptical and the individual cell becomes transformed into a single sporangium).

The following brief summary of these investigations shows the groundwork of these conclusions. In its earliest stage the spherical or slightly oval Rhinosporidium is about 6 μ in diameter, has a chitinoid envelope, a much vacuolated cytoplasm, and a vesicular nucleus with all the chromatin compacted in a centrosome. Granules of protein and globules of fat accumulate in the cytoplasm until the parasite attains a diameter of 50 to 60 μ, when the first nuclear mitosis takes place, beginning as an issue from the caryosome of four coarse twisted threads. Subsequently, successive nuclear divisions occur, each succession being performed in synchrony, and when the parasite possesses about 128 nuclei and is about 100 μ in diameter its hitherto chitinous cuticle becomes greatly thickened on the inside by deposit of a substance indistinguishable from cellulose; this deposit is deficient only at one point which marks a prospective pore. Synchronous mitosis is repeated until the cytoplasm begins to divide, and when, after twelve successive divisions, about 4,000 nuclei have been formed the division of the cytoplasm is complete. Two more divisions follow, until at last the individual Rhinosporidium has been transformed into a thick-walled (cellulose) sporangium containing about 16,000 young spores, or sporoblasts. It is to be remarked that in the process of division the entire cytoplasm breaks up; there is no residual protoplasm.

To follow the development of the young spores: of these some—usually up to one-third of them—remain unchanged, or may even become smaller; but the rest—commonly, but not always, those lying about the centre of the sporangium—grow to a size of 7 to 9 μ and secrete a mucoid, superficially chitinous envelope, and their cytoplasm becomes plotted off into a mulberry of 10 to 16 refringent spherules round the vesicular nucleus; most of these spherules have, in iron-haematoxylin preparations, a dense, deeply staining centre which certainly is not a nucleus. These spherules have been mistaken by previous workers for spores, or sporules, or sporozoites; but the author notices, in an addendum to his paper, that FREY and HARTMANN had concluded that the granules, 4 to 16 in number, formed in the sporoblast of *Rhinosporidium equi* are reserve granules, not sporozoites, and that the entire sporoblast becomes a spore.

The ultimate result of these processes is a ripe sporangium stretched to a diameter of 250 to 300μ or more, containing spores and sporoblasts packed in mucoid material, and having a pore at one point through which the spores and mucoid material issue.

The spores, when discharged, lie among leucocytes beneath the host's epithelium, unchanged; they may be ingested by leucocytes, or by wear or rupture of the epithelium they may pass away in the nasal secretion; or they may be carried along the lymph channels into spaces

in the connective-tissue where they have been observed to assume the trophic stage. In the transformation to the trophic stage the spore-envelope disappears and a new cell-wall is secreted apparently at the expense of the spherules, since these disappear. The young parasite is considerably smaller than the spore ; it is nourished on the lymph of the connective-tissue ; it grows—and the cycle is repeated.

Abnormal spores and degenerate parasites are described ; among the latter, large thick-walled forms may be seen with the interior invaded by connective-tissue cells and by young healthy parasites. Or sporangia approaching ripeness may become degenerate, finishing as a bag of empty spores and mucoid matter perhaps invaded by connective-tissue cells.

The author has failed repeatedly, like previous investigators, to procure infection of laboratory animals by inoculation. Multifarious attempts to cultivate the organism have also been unsuccessful with one rather doubtful exception where the culture proved to be not pure. The author discusses, but cannot throw any light on the mode of infection.

The characters emphasized as vindicative of a fungous affiliation for Rhinosporidium are ; that the trophic-stage reserves consist largely of fat ; that in preparation for spore formation repeated nuclear divisions take place, and that on each occasion all the nuclei divide simultaneously ; that the cytoplasm divides—and without residual protoplasm—at a late stage, and that the cells thus formed undergo only two more divisions to form spores ; also the cellulose wall, the mucoid matrix, and the pore of the sporangium.

The approved name of the parasite is established as *Rhinosporidium seeberi*, the specific name *seeberi* having five years priority of *kinealyi*.

With regard to the pathological effects of the parasite, as observed in the naso-pharynx, the tumour formed has in its early stages the familiar structure of a nasal mucous polypus ; in later stages it becomes firmer by hyperplasia of fibrous tissue ; and later still it assumes more the character of a cystic fibroma.

A. A.

Bach (F. W.) & Kiefer (K. H.). **Untersuchungen ueber Blastocystis.** [Researches upon Blastocystis.]—*Cent. f. Bakt.* 1 Abt. Orig. 1922. Nov. 18. Vol. 89. No. 4/5. pp. 72–98. With 1 plate.

This long dissertation upon Blastocystis includes a critical survey of the literature and a detailed account of the morphology, but it does not lead to much. All the theories of the nature of Blastocystis are discussed—that it is a link between amoeba and a flagellate ; the encysted form of Trichomonas ; a vegetable organism ; a phase in the development of a flagellate ; a degeneration product of some parasite or of some epithelial cell ; a Haplosporidian—but the authors only come back to the conclusion of D. D. Cunningham, the earliest observer, that the thing is an enigma. They appear to think, following Kuenen and Swellengrebel, that the solution of the enigma lies in the domain of pathological anatomy. But whether Blastocystis in the human gut has any constant pathological significance is left an open question, the authors at present resting on the statement that although it is often found in a healthy intestine it is met with in greatest abundance in cases where there is intestinal derangement of some sort.

A. A.

Lynch (Kenneth M.). **Cultivation of Blastocystis and Determination of Species.**—*Amer. Jl. Trop. Med.* Baltimore. 1922. Nov. Vol. 2. No. 6. pp. 539–542. With 4 plates.

Here are discussed and plentifully figured *Blastocystis hominis* Brumpt, *B. gemmagina* Lynch, and *B. sporogina*, which last the author is now, in deference to Kofoid's criticism, inclined to regard as a *B. hominis* parasitized by Sphaerita or some such organism.

A. A.

Balfour (Andrew). [Reported by.] **Observations on Wild Rats in England, with an Account of their Ecto- and Endoparasites.**—*Parasitology.* 1922. Dec. Vol. 14. Nos. 3 & 4. pp. 282–298. With 2 plates, 1 text fig. and 2 charts.

The prime object of the Machiavellian investigations here recorded was to seek some clue to some automatic infective method, strictly and safely specific for rats, of obstructing the reproduction of those animals through the act of sexual intercourse. After a general bacterial survey attention was finally concentrated on the genital tract of female rats, four in number, showing definite local pathological changes. The organisms found in association with these changes were isolated and experimentally tested, but notwithstanding the labour involved, "nothing definite resulted." But negative results serve to clear the way for further investigations.

As a very necessary preliminary a general survey of rat-parasites was carried out. Although naturally nothing very novel was expected and little revealed, the results are worthy of record here.

1. Ectoparasites. On 34 black rats *Laelaps echidninus* was found in 52·9 per cent., *Haematopinus spinulosus* in 44·2, and *Xenopsylla cheopis* in 5·9. On 444 brown rats, *Laelaps echidninus* was found in 24·1 per cent., *Notoedres notoedres* in 0·2, *Haematopinus spinulosus* in 11·3, *Xenopsylla cheopis* in 3·6, *Ceratophyllus fasciatus* in 3·2, *Ctenophthalmus agyrtes* in 0·9, and *Ctenocephalus felis* vel *canis* in 0·2.

2. Helminths. In the intestine of 34 black rats *Hymenolepis diminuta* was found in 17·6 per cent., *H. nana-fraterna* in 17·6, and *H. longior* Baylis (n. sp.) in 32·4, and *Oxyuris obvelata* in 3·0; also *Trichosomoides crassicauda* was found in the bladder of some of the black rats. In the intestine of 430 brown rats *Hymenolepis diminuta* was found in 28·4 per cent., *H. nana-fraterna* in 1·2, and *H. longior* Baylis in 24·9, *Heligmosomum braziliense* in 8·6, and *H. vexillatum* in 0·2, *Vaiannaia* (?) sp. in 0·7, and *Capillaria annulosa* in 0·4; also *Trichosomoides crassicanda* was found in the bladder of 48·3 per cent., and (very often) *Cysticercus fasciolaris* and (once) *Hepaticola hepatica* were found in the liver of the brown rats.

3. Intestinal Protozoa. In 32 black rats and 440 brown rats the following were found in the respective percentages: *Entamoeba muris*, 25·0 and 15·7; *Trichomonas muris*, 81·2 and 12·7; *Octomitus intestinalis*, 6·2 and 1·7, *Giardia muris*, 6·2 and 6·8; *Chilomastix bettencourti*, 18·6 and 1·8; *Eimeria falciformis*, 50·0 and 21·0.

4. Haematozoa. In 34 black rats and 444 brown rats the following were found in the respective percentages: *Trypanosoma lewisi*, 38·2 and 19·0; *Hepatozoon muris*, 5·9 and 10·8; *Grahamella joyeuxi*, 0 and 0·2.

A. A.

Brown (H. C.) & Stammers (G. E. F.). With an Introductory Note by Balfour (Andrew). **Observations on Canine Faeces on London Pavements; Bacteriological, Helminthological, and Protozoological.** —*Lancet.* 1922. Dec. 2. pp. 1165–1167.

Motor traffic in cities has compelled the proverbial friend of man to seek the pavements for relief, with the result that rather odious material of doubtful salubrity gets brought into houses on boots and on children's toys. The authors of this paper have endeavoured to find out how far this material, canine ordure, is to be regarded as directly menacing to health. They have examined a considerable amount of the material, collected mainly in the regions lying between Gordon Street and Square and the northern end of Tottenham Court Road, and their verdict is as follows.

The bacterial investigation of 100 samples revealed non-lactose-fermenting bacteria in 20 cases. The effects of these bacteria were tested on mice, and the inference from the experiments is that they "are not markedly pathogenic when taken by the mouth, and, therefore, so far as this investigation goes, the presence of [dog] faeces on the pavements of cities does not appear to be a direct menace to man."

The helminthological results of the examination of 200 samples disclosed ova of the following *types* in the *percentages* severally stated: *Taenia serrata*, 2·0; *Dipylidium caninum*, 1·5; Ascaris, 3·0; Oxyuris, 0·5; Ancylostoma, 1·0; Trichocephalus, 0·5.

Examination of 200 samples for Protozoa brought to light, besides some coccidia-like bodies which did not develop under observation, cysts of the following kinds in the *percentages* severally stated: Giardia, 4·5; Isospora, 1·2; Eimeria, 1·2; *Entamoeba coli* type, 1·0; *Endolimax nana* type, 0·5; Dimastigamoeba type, 0·5.

A. A.

Bell (W. B.). **Work of the Biological Survey as it affects Disease Carriers.**—*Texas State Jl. Med.* 1923. Jan. Vol. 18. No. 9. pp. 461–465.

The principal economic work of this survey is to destroy wolves, coyotes, etc., that play havoc with live stock, and the various rodents that damage growing crops of all kinds and agricultural produce in transit and store. In the year 1920–21 nineteen million acres of land were treated with poisoned bait for rodents, and in eight months of the following year 176,703 larger carnivora were killed; the survey also co-operated in State campaigns against house-rats. Incidentally, of course, much assistance was rendered to the conservation of the public health.

A. A.

Nöller. **Die Bekämpfung der hygienisch wichtigen tierischen Schädlinge.** [The Control of Hygienically Important Animal Pests.]—*Cent. f. Bakt.* 1 Abt. Orig. 1922. Oct. 24. Vol. 89. No. 1–3. pp. 37–65.

This paper, which contains nothing new, deals with only one aspect of the control of animal pests of hygienic import, namely, methods of destroying them by poisons. The line of impact of the poison—whether through skin, or breathing machinery, or stomach—and the medium of application—ointment, liniment, lotion, wash, emulsion—are first discussed, and then the particular application to particular

kinds of pests. The pests themselves are catalogued as (1) non-parasitic carriers of disease and of parasites, such as rats and house-flies; (2) temporary ectoparasites, such as ticks, bird-mites, fleas, bugs, and certain bloodsucking flies; and (3) fixed ectoparasites, such as itch mites, lice, bird-lice, and tick-flies.

A. A.

Langeron (Maurice) & Du Noyer (Rondeau). **Coprologie microscopique.**—Reprinted from *Bull. Sci. Pharmacol.* 1922. Mar.–May. Nos. 3–5. 33 pp. With 12 figs.

Ample and excellent instructions for the examination of fresh faeces, followed by plentifully illustrated descriptions of the common ingredients of the faex and of the vegetable and animal trespassers—all in 33 pages. One would very much like to have an English version of this useful compendium.

A. A.

Pawlowsky (E.). **Au sujet de pseudo-parasites.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 825–826.

One of the impressive performances of the Oriental quack is to discover a maggot in some aching organ of his patient and to extract it by his conjury. The author of the present paper finds that some larvae "extracted" by Chinese "dentists" from aching teeth are Cecidomyidae (gall gnats), which certainly would fit the part [see this *Bulletin*, Vol. 13, p. 55].

A. A.

Faculté de Médecine de Paris. **Enseignement complémentaire de la parasitologie appliquée au diagnostic à l'hygiène et l'épidémiologie.** 24 pp. 1922. Paris: Masson & Cie, Editeurs, 120, Boulevard Saint-Germain.

Conspectus and syllabus of the courses of instruction provided at the Laboratory of Parasitology under the direction of Professor Brumpt, in Paris. The laboratory is situated at 15 Rue de l'Ecole de Médecine, and its staff includes MM. Joyeux, Neveu-Lemaire, Langeron, Larrousse, and Lavier; its collections include those particularly associated with the names of Davaine, Laboulbène, Mégnin, Blanchard, and Brumpt, and it possesses a considerable library, which receives regular accessions of current periodicals from many parts of the world. Apart from the vacation course of ten meetings, the course of instruction, which is entirely practical, includes Laboratory Technique, Protozoology, Helminthology, Medical Entomology, and Mycology, ten meetings being allotted to each of these subjects.

A. A.

Macfie (J. W. S.) & Ingram (A.). **Certain Nurseries of Insect Life in West Africa.**—*Bull. Entom. Res.* 1923. Jan. Vol. 13. Pt. 3. pp. 291–294.

This valuable paper gives an account of the specific insects (mainly Diptera) that the authors have bred from miscellaneous damp material collected from rot-holes, bamboo-stools, decaying logs, old canoes,

rotting fibre from base of banana trees, edges of pools and puddles, crab-holes, etc. The banana fibre was particularly prolific, and, next, the debris of rot-holes and the rotting wood scraped from old canoes lying afloat.

The total number of species of midges bred out makes quite a long list, and includes *Anopheles costalis* and 10 other species of Culicidae, among them *" Stegomyia fasciata."*

Mention is also made of a particular rot-hole in a *Poinciana regia* tree, kept under continuous observation by these indefatigable authors, from which all the six species of Stegomyia known to occur in Accra have issued.

Another most interesting item is a list of the Diptera locally associated with *Pistia stratiotes*—the " water-lettuce " or " water brussels-sprout," of circumtropical range in swamps. The local list includes 18 species of Culicidae, among them such formidable species as *Anopheles costalis, funestus,* and *pharoensis,* and also *A. marshalli, mauritianus,* and *nili.*

A. A.

Shannon (R. C.). **The Use of Nutrient Agar for rearing Dipterous Larvae.**— *Amer. Jl. Trop. Med.* Baltimore. 1922. Nov. Vol. 2. No. 6. pp. 555–557.

Having learned of Lutz's method of rearing larvae of Tabanidae in nice transparent agar instead of their native inconvenient mud, the author thought that beef-extract agar, which the larvae could eat, would be better still. He now, after trial, recommends this transparently clean, neat method, by which all the doings of the larva can be watched, and its cast skins immediately detected and secured. The bacteria and fungi that may sometimes contaminate the surface of the medium have not been found inconvenient to the observer, or harmful to larvae. As the writer points out, this method has numerous promising applications.

" Dehydrated Bacto-Nutrient Agar,"* which has only to be mixed with the desired amount of water and boiled, to be ready for use, is recommended as very convenient.

A. A.

Hacker (H. P.). **Malaria Bureau Annual Report, 1921.**—*Federated Malay States Med. Report for the Year 1921.* pp. 10–20.

Dr. Lamborn's work, which suggested that seasonal periods in the development of the alga-flora might give rise to a seasonal prevalence of specific Anopheles, has been continued.

Anopheles vagus and *aconitus* have been observed to lay fertile eggs throughout the year. For other local species the impression is that they also have no definite breeding season, but will breed when and where the natural conditions are suitable. What these conditions may be has to be discovered.

Under certain circumstances, still undiscovered, the larva stage of *A. aconitus* may be prolonged to 163 days. The larvae of *A. leucosphyrus,* particularly in abnormal breeding-places, have a tendency to vary; for this reason *A. watsoni,* the recently discovered larva of

* Supplied by Digestive Ferments Company, Detroit, Michigan.

which shows no perfectly constant difference from that of *A. leucosphyrus*, may possibly be, as STANTON conjectured, a variety of the latter species. The larvae of *A. aitkeni* also show variations. The larvae of several species of Anopheles that are commonly bred in pools, and even in large pools, have been found in disused utensils, etc., about habitations.

An outbreak of house-flies, identified as *Musca domestica*, was traced to an origin in cow-dung.

A series of appendices give the tabulated results of an immense amount of methodical work on the catches of specific Anopheles, both adults and larvae, in particular localities, month by month, throughout the year.

A. A.

WATSON (Malcolm). **The Control of Some Species of Anopheles with Special Reference to Biological Methods.**—*Trans. 4th Congress of the Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. pp. 435–440.

Watson came to the conclusion some years ago that the existence of a given species of Anopheles larvae in a given habitat is largely due to the composition of the water there, and that by investigating the factors that contribute to the aquatic economy of the given species it might be possible to control the species by modifying or " polluting " the water. He here, in the light of more extensive experience, commends this proposition as worthy of still further study.

A. A.

ROOT (Francis Metcalf). **The Larvae of American Anopheles Mosquitoes, in Relation to Classification and Identification.**—*Amer. Jl Hyg.* Baltimore. 1922. July. Vol. 2. No. 4. pp. 379–393. With 3 text figs. & 2 plates.

The author has made a comprehensive and detailed study of the larvae of the American species of Anopheles, and has produced the following key for their identification :—

" For the convenience of field workers, I include here a key to the identification of the mature larvae of American *Anopheles* as far as they are known. As can be readily seen, much remains to be done in completing such a key. The characters at present known only serve to designate whole groups of species in many instances. I have included statements as to the position of the palmate hairs, though in the light of what I have already stated in regard to their use, they should not be relied upon absolutely. The form of these statements can be readily understood, I think. For example, the statement ' Palmate hairs on Th, 1–7 ' means that they are present on the thorax and the first to seventh abdominal segments.

Key to the Known Larvae of American Anopheles Mosquitoes.

1. " Outer anterior clypeal hair unbranched 2
" Outer anterior clypeal hair dichotomously branched 5
" Outer anterior clypeal hair split up like a fan at tip—
A. fajardoi—Palmate hairs on 3–5.
" Outer anterior clypeal hairs with fine lateral branches—
A. albimanus—Palmate hairs on Th, 1–7 or on 1–7.
A. tarsimaculatus—Palmate hairs on 1–7.
A. argyritarsis—Palmate hairs on Th, 1–7 or on 2–7.
2. " Lateral hairs of abdominal segments 4 to 6 feathered 3
" Lateral hairs of abdominal segments 4 to 6 not feathered .. 4

3. " Frontal hairs very short and unbranched—
A. barberi—Palmate hairs on 3–6.
" Frontal hairs of normal length, some of them unbranched—
A. cruzi—Palmate hairs on 1–7, leaflets sharp pointed.
A. neivai—Palmate hairs on 2–7, leaflets truncate at tip.
4. " Leaflets of palmate hairs slender, smooth, not notched—
A. lutzi—Palmate hairs on 1–7.
A. parvus—Palmate hairs on 1–7.
" Leaflets of palmate hairs lanceolate, notched near tip—
A. eiseni—Palmate hairs on 2–7.
" Leaflets of palmate hairs approaching terminal filament type—
A. pseudopunctipennis—Palmate hairs on 3–7.
5. " Outer anterior clypeal hair with more than twenty ultimate branchlets 6
" Outer anterior clypeal hair with less than ten ultimate branchlets—
A. punctimacula—Palmate hairs on 3–7.
A. strigimacula—Palmate hairs on 3–7.
A. apicimacula—Palmate hairs on 3–7.
6. " Inner anterior clypeal hair with fine lateral branches—
A. grabhamii—Palmate hairs on 3–7.
" Inner anterior clypeal hairs unbranched—
A. punctipennis—Palmate hairs on 2–7.
A. quadrimaculatus—Palmate hairs on 2–7.
A. crucians—Palmate hairs on 3–7, first and last pairs small.
A. occidentalis—Palmate hairs on 3–7, all about same size."

A. A.

i. Schüffner. **Bericht ueber die Assanierung von Sibolga.** [Report on the Sanitation of Sibolga.]—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. pp. 431–434.

ii. Swellengrebel (N. H.). **De theorie van Roubaud in Holland.** [Roubaud's Theory in Holland.]—*Nederl. Tijdschr. v. Geneesk.* 1922. Vol. 66. Pt. 2. No. 8. pp. 856–862. With 1 map.

iii. Schueffner (W.). **Mückenfang und Ableitung der Malariamucken auf Tiere.**—*Ibid.* pp. 457–468. With 1 plate.

iv. Neiva (Arthur) & Pinto (Cesar). **Contribuição para o conhecimento das anophelinas do estado de Matto Grosso com a descripção de uma nova especie.**—*Brazil Medico.* 1922. Nov. 18. Year 36. Vol. 2. No. 46. pp. 321–322.

v. —— & ——. **Considerações sobre o Genero " *Cellia* " Theobald, com a descripção de uma nova especie.**—*Ibid.* Dec. 2. No. 48. pp. 355–357. With 4 text figs.

i. Sibolga, on the west coast of Sumatra, about the latitude of Singapore, lies at the mouth of a stream which forms brackish lagoons very favourable to the breeding of the dangerous *Anopheles ludlowi*. *A. maculatus*, so dangerous in the Malay States, is not formidable at Sibolga.

ii. Roubaud's theory was dealt with in this *Bulletin* (Vol. 16, p. 103, and Vol. 19, pp. 476–480). Swellengrebel compares the number of cattle with the prevalence of malaria in different parts of North Holland. He is convinced that cattle may attract the mosquitoes and accordingly diminish the danger offered by their bites, but he thinks it unproved and improbable that this is the only explanation of local immunity against malaria in certain regions. On the contrary the presence of cattle may lead to increase of the number of Anophelines in human dwellings. Roubaud does not take into account influences like cessation of the production of eggs and stabilization of the mosquitoes in the houses in winter time, resulting in elimination of the influence of cattle. If zootropic races of Anopheles exist at all, such cannot be the result of hereditary fixation of their preference for cattle.

iii. General remarks on the subject of destruction, etc., of mosquitoes in houses, etc., and by diverting them to cattle ; prefaced by some remarks on what the author considers to have been an illustration of the prophylactic value of quinine among some school children in a bad epidemic of malignant tertian malaria.

iv. Among the Anopheles collected by Pinto in the State of Matto Grosso (Brazil) are three specimens of a new species, *Cellia rondoni*, here fully described.

v. *Cellia triannulata* described as a new species approximate to *C. rondoni* of these authors.

A. A.

i. Young (C. J.). **Notes on the Bionomics of** *Stegomyia calopus*, **Meigen, in Brazil. Part I.**— *Ann. Trop. Med. & Parasit.* 1922. Dec. 30. Vol. 16. No. 4. pp. 389–406.

ii. Gordon (R. M.). **Notes on the Bionomics of** *Stegomyia calopus*, **Meigen, in Brazil. Part II.**— *Ibid.* pp. 425–439. With 2 figs.

There is nothing very novel or unexpected in these miscellaneous observations.

i. More eggs were observed to be laid on a damp surface than on water, and more on foul water than on clean. Of eggs kept *in water* some hatched after five months, but none after seven months. The duration of the larva stage varied from 4–42 days, and of the pupa stage from 1–3 days. Pupae of at least 24 hours gave issue to adults although kept dry. No eggs were produced on a diet of peptone and sugar. In these observations the males that hatched out very much exceeded the females in number.

ii. In the course of 15 months' search about Manaos *Stegomyia fasciata* larvae were never found except in " domestic " waters. Their absence from natural waters is not due to any aversion of the female to deposit eggs, or to any inability of larvae to grow, in such waters, but appears to be due to the activity of natural enemies. In the earliest adult hatchings from the issue of mixed batches of eggs males preponderated [a phenomenon of common observation not only with Stegomyia but with many other Arthropods]. Eggs [as usual] were not produced on any diet but blood. The insect will bite corpses even 18 hours after death. *Stegomyia fasciata* larvae observed in jars of water in a ship that left Para in February had given issue to living adults at Havre 16 days afterwards and at Liverpool 20 days afterwards.

A. A.

Monroe (W. M.). **Notes on the Limit of the Usefulness of Fish in Larvae (*Aëdes calopus*) Control.**— *Amer. Jl. Trop. Med.* Baltimore. 1923. Jan. Vol. 3. No. 1. pp. 21–26.

For service against *Stegomyia fasciata* larvae in cisterns and barrels bottom-feeding fish are rather more efficient than top-feeders. Usually a single fish, preferably a male, is employed for a cistern and a pair for a barrel. An average consumption of larvae is about 150 a day. In one or two per cent of barrels fish and larvae may be found living happily together, but this is only because the supply of larvae exceeds the fishes' demand.

A. A.

Dunn (Lawrence H.). **Prevalence of the Yellow Fever Mosquito,** *Aëdes calopus,* **in the Southern Part of Peru.**—*Amer. Jl. Trop. Med.* Baltimore. 1923. Jan. Vol. 3. No. 1. pp. 1–8.

The survey included the principal ports and coastal-plain towns in the southern half of Peru. Two thousand two hundred and seventy houses were visited and *Aëdes calopus* (= *Stegomyia fasciata*) was breeding in more than 43 per cent. of them.

A. A.

i. Porto Rico Agricultural Experiment Station. **Circular No. 20. Mosquito Survey of Mayaguez.**

ii. Legendre (J.). **Rôle trophique des oiseaux à l'égard des culicines.**—*C.R. Acad. Sci.* 1922. Oct. 16. Vol. 175. No. 16. pp. 646–648.

iii. Barraud (P. J.). **A Revision of the Culicine Mosquitoes of India. Part I.**—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 772–788. With 17 plates.

i. The species identified were *Anopheles albimanus* (6·5 per cent.), "*Aedes aegypti*" (alias *Stegomyia fasciata*) (65·5 per cent.), and *Culex quinquefasciatus* (= *C. fatigans*) (24·5 per cent.).

ii. The author, in continuation of his studies of the same kind made in other places, finds that at Beyrout *Culex pipiens* feeds mainly on the common sparrow, though it also haunts rabbit-hutches and fowl-houses. The author thinks highly of the relief and protection thus given to man by humble creatures like sparrows.

iii. This instalment, which is profusely illustrated, deals with the Indian species of Stegomyia. Two Stegomyia-like species having, among other differentiae, the palpi alike in length (about one-third that of the proboscis) in both sexes, are separated as a new genus, *Christophersiomyia.*

A. A.

Pringault (E.). **Etude sur la toxicité des vapeurs de quelques substances chimiques sur les Phlébotomes.**—*C.R. Soc. Biol.* 1922. July–Sept. Vol. 87. No. 28. pp. 846–848.

The vapours of the following substances in the severally stated proportions per cubic metre of space were observed to be fatal to *Phlebotomus perniciosus* in the respective times stated:—Sulphur, 50 gm. in 30 seconds or more; 0·02 per cent. HCN in 5 seconds; methyl or ethyl alcohol, 125 gm. in 10 minutes; formaldehyde, 50 gm. in about 5 minutes; pyridine, 5 gm. in about a minute; nicotine, about 5 gm. in 20 seconds; cresyl, 1 gm. in 10 minutes. Vaporization of 100 gm. sulphuric ether or chloroform was not fatal after 15 minutes contact. Vapour of cresyl seems to the author to be the best for practical purposes.

A. A.

i. Parrot (L.). **Présence de** *Phlebotomus perniciosus* **Newstead dans la région parisienne.**—*Bull. Soc. Path. Exot.* 1922. Oct. 11. Vol. 15. No. 8. p. 694.

ii. Ingram (A.) & Macfie (J. W. S.). **West African Ceratopogoninae. Part II.**—*Ann. Trop. Med. & Parasit.* 1922. Oct. 18. Vol. 16. No. 3. pp. 243–282. With 24 figs.

iii. —— & ——. **A Note on the Prevalence of Ceratopogonine Midges on the Windows of the Accra Laboratory during a Completed Year.**—*Ann. Trop. Med. & Parasit.* 1922. Oct. 18. Vol. 16. No. 3. pp. 301–304.

iv. Senior-White (Ronald). **A Note on Pseudo-Tracheal Teeth in the "Eye-Fly"** (*Siphunculina funicola,* **de Meijère**).—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 825–826. With 1 plate.

i. Parrot reports Phlebotomus in the outskirts of Paris, and a correspondent of Marchoux writes of being assailed by a swarm of Phlebotomus in Charente.

ii. In this second instalment of a valuable paper 16 species, of which 13 are new to science, are fully described with, in most cases, some apposite figures.

iii. In the course of 12 months' systematic daily observation between three and four thousand individual Ceratopogoninae and Phlebotomus were captured on the windows of the author's laboratory at Accra.

iv. [Not a few Muscoid flies have the pseudotracheal channels reduced in number and in part offensively modified] and attention is here drawn to the "eye-fly" (*Siphunculina funicola*) where the free ends of some of the pseudo-tracheal rings are produced to form long spinules.

A. A.

Johnston (T. Harvey). **Some Facts regarding the Biology of the House Fly.**—*Med. Jl. Australia.* 1922. Oct. 28. 9th Year. Vol. 2. No. 18. pp. 494–499.

After commenting on the paucity of published observations of the life-history of the common house-fly (*Musca domestica*) in Australia, the author gives in preliminary detail some observations made by Mr. O. W. Tiegs and himself in Brisbane in 1919–21, of which the following is a sufficient summary for the present.

In Brisbane the house-fly can pass through all its stages from egg to adult in 7–8 days in midsummer, 11–15 days in autumn, and 12–16 days in winter. Pairing occurred in 4–8 days after eclosion, eggs being laid 4 days afterwards. From these facts the obvious inference is drawn that in Brisbane a weekly collection of house-refuse and night-soil does not preclude the possibility of flies proceeding so far in their development in appropriate household receptacles as to escape immediate destruction.

The author and his associate have also made some careful observations of the life-history of *Sarcophaga* spp. in Brisbane. The term from birth of larva to eclosion of adult may be 12–18 days in summer and 10–12 weeks as cold weather advances. Pairing usually occurs in 2–3 (sometimes as many as 8) days after eclosion, and the bringing-forth of larvae begins about 8 days afterwards. When the larva is full grown (3-6 days in summer, 7 days during winter) a pre-pupal stage intervenes—of 2–3 days duration in summer and 7–8 days in winter and spring—during which the larva, though not feeding, wanders away, with considerable facility in climbing, in search of a suitable site for pupation.

The paper is valuable equally for biological and historic detail.

A. A.

Harrison (Launcelot). **Flies and Infectious Disease.**—*Med. Jl. Australia.* 1922. Oct. 28. 9th Year. Vol. 2. No. 18. pp. 489–494.

There is nothing new in this paper, the prologue of which contains some unpardonably loose statements—as that Sir Patrick Manson "suggested as long ago as 1879 that microfilariae might be transmitted by blood-sucking insects, such as mosquitoes, but the matter was not proved at that date," and "Bruce, in 1893, elucidated the part played by tsetse flies in the transmission of sleeping sickness."

A. A.

Dunn (L. H.). **Observations on the Oviposition of the House-Fly, *Musca domestica*, L., in Panama.**—*Bull. Entom. Res.* 1923. Jan. Vol. 13. Pt. 3. pp. 301–305.

After reviewing work of other observers, the author describes in detail, and tabulates, his own observations which were made on isolated couples of *Musca domestica*, and were conducted throughout with the most scrupulous regard to the sanitary well-being of the insects. The author's conclusions are: That pairing may occur within 24 hours from emergence. That one successful pairing seems to endow the female with fertility for life. That oviposition may begin as early as $2\frac{1}{4}$ days after emergence. That as many as 159 eggs may be laid in one batch. That large batches are sometimes laid at intervals of but 36 hours. That one female may produce as many as 21 batches—a total of 2,387 eggs—in the course of 31 days.

A. A.

Wollman (E.). **Biologie de la mouche domestique et des larves de mouches à viande, en élevages aseptiques.**—*Ann. Inst. Pasteur.* 1922. Nov. Vol. 36. No. 11. pp. 784–788.

Of some new-emerged aseptic house-flies fed on sterilized milk and kept at a temperature of 24°–26° C., three lived 26–31 days in August–September, one lived 61 days in October–December, and one lived 62 days in March–May. Under aseptic management the interval between one adult generation and another was 23–24 days. Larvae can develop quite well in the absence of microbes. The author verified Fabre's statement that the larvae dissolve their pabulum by the emission of their own secretions into it.

A. A.

Roubaud (E.) & Veillon (R.). **Recherches sur l'attraction des mouches communes par les substances de fermentation et de putréfaction.**—*Ann. Inst. Pasteur.* 1922. Nov. Vol. 36. No. 11. pp. 752–764.

To eyes in which the all-pervading mysteries of living nature are reflected as tropisms and tropical reactions, this paper will be interesting: it deals with the chemotropic responses of flies. When flies of either sex are hungry they react to chemotropisms of one sort; when female flies are heavy with ripe eggs they react to chemotropisms of another sort.

The details of eight experimental observations made in the open air in five midsummer days are recorded, among other things, in this paper. They showed extract of yeast and macerated fish to be feebly attractive to hungry flies, and macerated pears to be very highly attractive; meat two and three and four days old was more attractive than putrescent meat; cooked potatoes also were attractive. The blowfly, *Calliphora erythrocephala*, was observed to be more attracted by the potato than by the meat, and Anthomyid flies to be more attracted by meat than by vegetable matter. But in all these experiments in the open air the house-fly, *Musca domestica*, appeared to take little interest; only 15 were caught altogether.

To female flies having ripe eggs to deposit, CO_2 and acetic acid provide the necessary stimulus. A certain elevation of temperature and atmospheric moisture are also necessary, these conditions, as the authors suggest, operating as a sort of warm bath to facilitate delivery of the eggs.

A. A.

Richardson (Charles H.) & Richardson (Eva H.). **Is the House-Fly in its Natural Environment attracted to Carbon Dioxide ?**— *Jl. Econ. Ent.* 1922. Dec. Vol. 15. No. 6. pp. 425–430.

C. H. Richardson, in 1916, reported, as the result of adequate experiment, that the female house-fly (*Musca domestica*) is attracted by the ammonia emitted from fermenting organic matter Later, Crumb and Lyon concluded that it is not the ammonia but the CO_2 emanating from decomposing organic matter that attracts the parturient house-fly. The Richardsons now give full details of experiments which confirm the conclusion that ammonia attracts the parturient house-fly and contradict the conclusions of Crumb and Lyon. The experiments were carried out in the open air, close to a dwelling-house, and sterilized bran, moistened with distilled water, was used throughout as the indifferent excipient for the pure chemical material from which the requisite gases were disengaged.

A. A.

Roubaud (E.). **Recherches sur la fécondité et la longévité de la mouche domestique.**— *Ann. Inst. Pasteur.* 1922. Nov. Vol. 36. No. 11. pp. 765–783. With 1 fig.

The longevity of the house-fly is very difficult to estimate. A longevity of 11–16 weeks attributed to this insect by some authors can be possible only under abnormal conditions of reproductive inertia ; under normal conditions of sexual and summer activity the term of life must be much less—according to Hewitt's estimate, about two months.

Quite apart from temperature the fecundity of the house-fly is influenced by various conditions. House-flies fed solely on sugar will not produce eggs ; there must be nitrogen in their food. Horse-dung, so attractive for oviposition, is not by itself a fertile diet, though human excrement is. Empusa infection does not necessarily cause sterility.

In a briskly-fermenting dung-hill, in summer, the development of the house-fly from egg to adult takes six to nine days. As at a temperature of 68° F. the adult will begin to deposit eggs six days after emergence, the compass of a summer-generation on a suitable dung-heap may be calculated as 12–15 days—from one generation to another. If, as is certain, a single female house-fly may bring forth more than 600 eggs in the course of her existence, and if we allow, say, 18 days (instead of 12–15) from one generation to another, then in computing on September 30 the possible descendants of a house-fly hatched on May 1 the result is perfectly stupendous.

A. A.

Onorato (Raffaele). **Le miasi in Tripolitania.**— *Arch. Ital. di Sci. Med. Coloniali.* Tripoli. 1922. Jan.–Feb. ; Mar.–Apr. ; May ; June ; July ; Aug. ; Sept. ; Oct. ; Nov. ; & Dec. Vol. 3. Nos. 1–2 ; 3–4 ; 5 ; 6 ; 7 ; 8 ; 9 ; 10 ; 11 ; & 12. pp. 14–29 ; 33–45 ; 69–88 ; 101–117 ; 155–162 ; 188–193 ; 216–227 ; 229–259 ; 261–283. With 28 figs. ; & 293–315. With 16 figs.

Although this series of papers contains nothing new or unfamiliar, it constitutes a very useful local and seasonal record—having also a general interest—of myiasis in man. Eighty-five cases of " secondary"

and 16 of "primary" myiasis are considered in detail—secondary myiasis referring to cases where maggots have obtained a lodging in existent lesions of various kinds; primary myiasis referring to cases where maggots alone are responsible for lesions or disturbances in various organs and regions of the body. Not all the species have been identified, but the following is the list of those that have been: *Wohlfartia magnifica, Sarcophaga haemorrhoidalis* and *S. beckeri,* Cynomyia sp., *Musca domestica, Calliphora erythrocephala* and *C. vomitoria, Lucilia serricata* and *L. caesar,* Pycnosoma sp., *Stomoxys calcitrans, Philaematomyia insignis, Mintho praeceps,* Phormia sp., *Fannia canicularis, Oestrus ovis,* and *Hypoderma bovis.* The species are described and figured in 18 plates and there is a useful bibliography.

A. A.

Gander (G.). **Un cas de myase sous-cutanée.**—*Rev. Méd. de la Suisse Romande.* 1922. Sept. Vol. 42. No. 9. pp. 597–600.

A case of myiasis in a little girl of four years. She had been ill for more than three months, first with fever and abdominal pains, then with pains in the thorax, finally with headache and vomiting, leading up to an epileptiform fit. Meningitis was suspected.

For two days after the author's visit the child was better, but on the fourth day she became delirious and convulsed, and on the next day the temperature was 104° F., there was twitching of the hands, and the eyelids were oedematous. Then the mother said that "something had come out during the night," and the author, investigating the scalp, found in the parietal region a little crater containing something that squirmed. This proved to be an Oestrid larva [probably Hypoderma]. After the removal of the larva and a sleep that lasted nearly 24 hours the little patient rapidly recovered.

A. A.

Stancanelli (Pietro). **Myiasis muscosa (da *Sarcophaga magnifica* Schiner) su tigna favosa.** [Myiasis (Larvae of *Sarcophaga magnifica*) developing in Favus.]—*Policlinico.* Sez. Prat. 1922. Oct. 16. Vol. 29. No. 42. pp. 1357–1359.

A report of a case of a man, 19 years of age, who had suffered from Favus since childhood. A slight injury allowed the development of the maggots, which were lodged in enormous numbers in a cavity the size of a large turkey's egg over the occipital region. The patient was accustomed to sleep in the open.

H. Harold Scott.

Martinez (Ezequiel A.). **Reacciones biológicas encontradas en un sujeto afecto de miasis nasal producida por la *Chrysomya macellaria.*** [Biological Reactions in a Patient suffering from Nasal Myiasis due to *Chrysomyia macellaria.*]—*Crónica Méd.* Lima. 1922. Aug. Vol. 39. No. 710. pp. 294–296.

A negro, 18 years of age, on rising from bed was seized with violent sneezing and catarrhal symptoms. During the ensuing three days

there was general malaise with pain in the left frontal region and profuse blood-stained discharge from the left nostril. Numerous adult larvae of *Chrysomyia macellaria* were discovered and expelled. Other symptoms noted were: A rise of temperature between 38·2° and 39° C. for three days after expulsion of the larvae; the presence in the sputum of staphylococci and streptococci, micrococcus catarrhalis and Pfeiffer's bacillus. Blood examination revealed erythrocytes 4,120,000, leucocytes 12,000 per cmm., eosinophiles 12 per cent. A week later erythrocytes were 3,660,000, leucocytes 9,000, eosinophiles 0. The Wassermann reaction was "frankly positive, but, without any specific treatment, became negative eight days later."

All these changes are ascribed to the presence of the larvae which had caused no discomfort during the time of their development.

H. Harold Scott.

i. Desoil (P.) & Delhaye (R.). **Contribution à la pathogénie des myases intestinales par l'étude de la résistance des oeufs et larves de Calliphorées aux agents physiques et chimiques intervenant dans le tube digestif.**—*C. R. Soc. Biol.* 1922. Nov. 18. Vol. 87. No. 34. pp. 1098–1100.

ii. —— & ——. **Essais d'infestation expérimentale du tube digestif par oeufs et larves de** *Calliphora vomitoria*.—*Ibid.* Dec. 16. No. 38. pp. 1303–1305.

i. This paper, dealing with intestinal myiasis from the standpoint of larvae not specially adapted to an endoparasitic existence, contains details of well-varied experiments with eggs and maggots of the common blowfly exposed *in vitro* to conditions corresponding with those to be met with in the active human stomach.

The proximate conclusions are that both eggs and quite intact larvae can withstand for a time the most potent biochemical hostilities of the human stomach as counterfeited in vitro.

The ultimate conclusions are that blowfly eggs swallowed in food could no doubt pass unhurt through the human stomach, especially with the assistance of liquid refreshment; but that with blowfly larvae other things than the biochemistry of the stomach have to be considered, namely, mechanical injury from the intrinsic movements of the organ (for the larvae are very vulnerable), and privation of air by mechanical obstruction of the spiracles.

ii. Eggs of blowfly (*Calliphora vomitoria*) are not injured at all in the alimentary canal of the frog, but are digested by birds, the dog, and usually, but not in every case, by the guinea-pig. Maggots are damaged but not always killed in passage through the frog, are quickly killed in the crop of the pigeon and fowl (though on one occasion two maggots were found still living in the intestine three hours after ingestion), and though they may offer a temporary resistance in the stomach of mammals (guinea-pig, rabbit and dog) are ultimately killed by the gastric juice and found dead either in the stomach or the intestine. Young maggots can easily creep into the rectum through the anus.

A. A.

i. Pawlowsky (E N.) & Stein (A. R.). **Nouveau cas de** *Creeping Disease* (*Myasis linearis*) **en Russie.**—*Bull. Soc. Path. Exot.* 1922. July 12. Vol. 15. No. 7. pp. 555–558.

ii. Villard (H.). **Deux cas de Myase oculaire.**—*Ann. d'Oculistique.* 1922. Sept. Year 85. Vol. 159. No. 9. pp. 670–671.

iii. Walker (E. M.). **Some Cases of Cutaneous Myiasis, with Notes on the Larvae of** *Wohlfahrtia vigil* **(Walker).**—*Jl. Parasit.* 1922. Sept. Vol. 9. No. 1. pp. 1–5. With 3 plates.

i. The larva in this case was identified as a *Gastrophilus*, and is said to have been burrowing in the skin for more than five months. The paper is occupied with an account of the microscopic effects upon the epidermal cells.

ii. Two cases observed at Montpellier, one in a child of three years, in which young larvae of flies of some kind were lodged in the conjunctiva.

iii. Three cases of cutaneous myiasis, caused by *Wohlfartia vigil*, in infants in Canada; and a fourth case caused by numerous larvae of some species of fly not determined. Certain structures of the former larvae are figured.

A. A.

Roubaud (E.). **Les mouches tsétsés en Afrique Occidentale Française.** —*Bull. Comité d'Etudes Historiques et Scientifiques de l'Afrique Occidentale Française.* 1920. July–Sept. No. 4. pp. 257–300. With map.

This is a perspicacious account of the tsetse flies of French West Africa—their structural features, biology, and distinctive specific characters; their distribution and habitat; their seasonal migrations; their local relations (through influence upon humidity and vegetation) with geology, topography and soil; and the subject of their control. Various problems of trypanosomiasis are also discussed, such as differences in the susceptibility of different domestic animals, protective influence of animals, particularly resistant breeds of cattle, for man, and local differences in the infectivity of tsetse flies.

According to the author two-thirds of the area of French West Africa is infested with Glossina, the insect's range being limited to 14° N. lat., except in some specially favourable spots on the banks of the Niger as far as 16° N., where *G. medicorum* occurs. Of the nine species appertaining to the French territories only four, namely, *palpalis*, *tachinoides*, *morsitans*, and *longipalpis*, are dealt with as being of importance, and of these four only *G. palpalis* tends to accommodate itself to the vicinity of man. *G. morsitans* is described as a typically wild fly never found in populous tracts and having no propensity for man.

In considering problems of trypanosomiasis the particular susceptibility of the humped Indian cattle, and the remarkable insusceptibility of the little N'dama cattle and of the dwarf Fouta goat are mentioned. With regard to human trypanosomiasis, the author observes that the most dangerous localities are those where *G. palpalis* is least abundant, these, for the fly, being areas of deficient food-supply, where, consequently, man is most likely to be attacked.

The author discusses the wonderful localization of trypanosome diseases, and the want of any parallelism between the distribution of the different viruses and that of their specific tsetse flies; this he can explain only on the theory that different strains of flies must differ in susceptibility to infection.

The control of Glossina is admitted to be a difficult subject. The author appears to think that diffusion of knowledge of all the facts about tsetse flies and their doings, particularly its diffusion in schools, must perforce do good. For *G. morsitans* he advises pushing the big game into the background; for "hygrophile" species clearing and destruction of coverts, and for *G. palpalis* in particular the stalling of cattle—preferably cattle of resistant breed—as a counter-attractive screen to villages. Looking for breeding-grounds to destroy is arduous work and the practical results can only be mere crumbs.

A. A.

Roubaud (E.). **Les mouches tsétsés dans l'Ouest-Africain : Distribution géographique ; Histoire ; Rôle pathogène.**—*Ann. Inst. Pasteur.* 1922. Oct. Vol. 36. No. 10. pp. 720–728. With 1 folding map.

Nine species of Glossina inhabit French West Africa, namely, *palpalis, tachinoides, pallicera, morsitans, longipalpis, fusca, nigrofusca, medicorum,* and *tabaniformis,* and this instalment deals with their distribution, which is intimately related with that of the vegetation, in that particular territory. There are three obvious local zones of vegetation, namely, a broad zone of heavy forest; further north, a zone of savannah where heavy forest merely fringes the rivers and water-courses; and still further north, a Saharan zone of acacia-thorn and jujube, where tsetse flies hardly occur. An interesting feature is the map showing the distribution of the several species of Glossina, the distribution of trypanosomiasis, and the localization of big game.

A. A.

Johnson (W. B.) & Lloyd (Ll.). **Tsetse Investigation.**—*Nigeria Ann. Med. & San. Rep. for the Period 1919.* 1921. pp. 30–32.

The provinces investigated in Northern Nigeria included the northern part of Nupe, the eastern part of Sokoto, the western and southern part of Kano, the northern part of Zaria, and the middle and northern parts of Bauchi. The survey was continued from June 1921 to April 1922.

The species occurring here are *Glossina palpalis, tachinoides, morsitans, longipalpis* (localized in the extreme south), and *fusca* (a rarity). *G. tachinoides* is the prevalent species, being found wherever there is permanent water and the primary forest has not been farmed out; it is also considered the most important enemy, as it attacks man and cattle as well as game animals, and is known locally to carry sleeping sickness and trypanosomiasis of stock; like *palpalis,* it breeds freely in the dry season, but not, or not so much, in the wet season; its pupae are found in sand (occasionally in cracks in dry mud) generally in open glades of dense forest devoid of low undergrowth; it is computed to get about 20 per cent. of its blood from non-mammal sources, probably monitor lizards. *G. palpalis* is not considered important, though in Nassarawa it is certainly a carrier of sleeping sickness; it occurs in evergreen forest along the larger streams and the permanent hill torrents, be ng most prevalent in the east and south of Northern Nigeria; its pupae are found in dry sand in forest where there is also low undergrowth. *G. morsitans* has a wide geographical distribution but a limited range; though it needs a comparatively dry climate, it

is to be found only where water is near the surface ; though it is never met with apart from a certain amount of game, it is not always found where game is present ; economically it is regarded as more important than *palpalis*, since it excludes stock from many suitably watered tracts ; it breeds freely in the dry season.

Of 322 *morsitans* examined, 3·4 per cent. had flagellates in the gut only, 10 per cent. in the proboscis only, and 5·9 per cent. in both regions. Of 1,084 *tachinoides*, 6 per cent. had flagellates in the gut only, 2·7 per cent. in the proboscis only, and 1·3 per cent. in both regions. Of 437 *palpalis*, 3·2 per cent. had flagellates in the gut only, 1·8 per cent. in the proboscis only, and 0·7 per cent. in both regions.

A. A.

Swynnerton (C. F. M.). **The Entomological Aspects of an Outbreak of Sleeping Sickness near Mwanza, Tanganyika Territory.**—*Bull. Entom. Res.* 1923. Jan. Vol. 13. Pt. 3. pp. 317–370. With 6 plates and 1 map.

The minor epidemic of sleeping sickness to which this prompt and well-reasoned report relates has broken out in that northern part of the Mwanza district which borders the Speke Gulf at the south-easterly corner of Lake Victoria.

Some parts of the district are open country, considerably cultivated, pastured and settled, and free from Glossina ; but a great deal of it, including the area of the outbreak, is savannah woodland and acacia thorn-bush, sparsely inhabited by people who live largely by fishing and hunting, and heavily infested with Glossina, of which, however, only one species—the new *G. swynnertoni*—has as yet been found in the area of the outbreak.

In the paths and bush villages of this area *G. swynnertoni* was caught in thousands, and its puparia have even been found in the immediate vicinity of villages. This particular species, in short, has concentrated its attention on man, the reason being, as the author states—with full appreciation of the significance of his statement—that in the particular area of the outbreak game animals have become exceedingly scarce. One cause of this depletion of game was a famine that forced the people to seek their food by hunting.

The author does not pretend to have been able, in the course of a few weeks' survey, to make an exhaustive study of the habits of *G. swynnertoni* ; but he has observed that, given a choice, it has no preference for cattle before the human species, that the females are as bold and range as freely on the wing as the males, and that under the local conditions (absence or paucity of game) "it is an unusually dangerous fly to man." During the author's brief survey (May–June) the insect was dispersed through the bush, but with a tendency to particular activity in thickets of certain kinds, at water-holes, and among *ilula* acacias at the dry edges of open swamps. Puparia were found accumulated in thickets, under trees, among lianas, and in recesses and crannies among broken granite kopjes.

From the propensity of this fly to attack man the author thinks it reasonable that the origin of the outbreak of sleeping sickness might have been an infected immigrant ; and from the abundance of the fly in villages, as well as from the common belief that "going to see the sick and taking the sick in" is the cause of fresh cases, the author

believes not only that man is the sole source of infection, but also that direct transmission is possible or even probable.

As emergency measures the author is in favour of evacuation of infected villages, clearing for 150 yards or more on either side of roads, and clearing round villages, fords, halting-grounds, and water-holes; and further, to hasten the destruction of flies already infected, burning cover, trapping flies, and propaganda.

As a general policy for fly-belts the author believes firmly in attack, and the main line of attack is "judicious settlement"—judicious settlement taking the form of large villages, with encouragement of agriculture (*e.g.* cotton) and stock-raising (cattle and eland)—in the fly-belt or at the borders of it, as circumstances dictate.

A. A.

Austen (E. E.). **A New East African Tsetse-Fly (Genus *Glossina*, Wied.), which apparently disseminates Sleeping Sickness.**—*Bull. Entom. Res.* 1923. Jan. Vol. 13. Pt. 3. pp. 311–315. With 3 text figs.

This new species, *Glossina swynnertoni*, is closely related to *G. morsitans*, from which it differs in the darker ground-colouring of the abdomen and the larger and broader dark bands of the individual abdominal terga; in the male there are also considerable differences in the detail of the genitalia.

A. A.

Schwetz (J.). **Contribution à l'étude des moeurs de la *Glossina Schwetzi*, Newstead.**—*Ann. Soç. Belge de Trop. Med.* Brussels. 1922. Dec. Vol. 2. No. 2–3. pp. 195–207. With 1 map.

Glossina schwetzi is remarkable for sexual dimorphy, the males resembling *G. tabaniformis* and the females *G. brevipalpis*. In habits *G. schwetzi* resembles *G. brevipalpis* in being vespertine, but is also to some extent nocturnal, though less constantly so than *G. fusca* and *tabaniformis*. The males of *G. schwetzi* hover about the ground on paths, after the fashion of *G. brevipalpis*, but the females rest on trees.

A. A.

Schwetz (J.). **Quelques nouvelles observations sur les moeurs de la *Glossina tabaniformis*, Westw.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1922. Dec. Vol. 2. No. 2–3. pp. 183–194. With 1 map.

G. tabaniformis is common, particularly at the beginning of the dry season, about Kikwit on the Kwilu, a tributary of the Congo. It has the same vesperal and nocturnal habits as *G. fusca*, but is more addicted to the aberration of biting during the day.

A. A.

Lamborn (W. A.). **Report of Medical Entomologist. Appendix.**—*Annual Med. Rep. on the Health & Sanitary Condition of the Nyasaland Protectorate, for the Year ended 31st December, 1921.* p. 39.

The Chalcid *Syntomosphyrum glossinae* appears not to be a hyper-parasite. The ease with which it can be dealt with, the comparative

brevity of its life-cycle, its great fertility, and its longevity seem particularly to recommend it for utilization against Glossina. It can be propagated on other "house-flies," particularly flesh-flies, without any vitiation of the appetite of such offspring for Glossina. The same facility of propagation on an extensive scale was proved for *Mutilla glossinae* also, but in this species the life-cycle is so long—fully two months—and the fecundity apparently so moderate as to be interdictive for practical purposes.

A. A.

Steffan. **Die Verbreitung der Glossinen.** [Distribution of Glossina.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1922 Vol. 26. No. 11. pp. 348–358. With 1 map.

Contains nothing of any particular value to English readers.

A. A.

i. Rodhain (J.). **Répartition de l'***Ornithodorus moubata* **dans le Bas et le Moyen Congo.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1922. Dec. Vol. 2. No. 2–3. pp. 213–226. With 1 map.

ii. Ghesquière (Jean). *Ornithodorus moubata* **Murray au Kasai et au Sankuru.**—*Ibid.* pp. 277–283.

i. The present range of *Ornithodorus moubata* in the Lower and Middle Congo is described and charted. The species appears to be generally scattered, either in houses or halting places, between the R. Kwango and the Atlantic coast.

ii. Discusses the distribution of *O. moubata* in a tract east of the R. Kwango. The species undoubtedly has been introduced quite recently; some say from Elizabethville, others from Katanga. An ant-lion is spoken of as a feeble foe of the tick.

A. A.

Hoffmann (W. H.). **Zur Vererbung von Krankheitserregern in den uebertragenden Insekten nach Beobachtungen an** *Rhodnius prolixus.* [Hereditary Transmission of Microbes. Observations on *R. prolixus.*]—*Muench. Med. Woch.* 1922. Nov. 24. Vol. 69. No. 47. pp. 1623–1624. With 1 text fig.

The author, in Cuba, has kept a female Reduviid bug, *Rhodnius prolixus*, under observation for some time; and in three months it has produced 400 eggs. He observes that young larvae will suck blood from the replete mother and from other replete larvae, and he suggests that this habit may be of a more general occurrence among bloodsucking insects, and that this possibility must be considered in adjudging evidence of alleged hereditary transmission of pathogenic organisms by bloodsucking insects.

A. A.

Macfie (J. W. S.). **Observations on the Rôle of Cockroaches in Disease.**—*Ann. Trop. Med. & Parasit.* 1922. Dec. 30. Vol. 16. No. 4. pp. 441–448.

The following organisms passed, apparently unharmed, through *Periplaneta americana*: *Bacillus tuberculosis* and *leprae*, cysts of

Entamoeba histolytica, coli, and of a *coli*-like species from a monkey, and of *Giardia intestinalis*, and eggs of *Ancylostoma duodenale* and *ceylanicum, Necator americanus, Ascaris lumbricoides, Trichuris trichiura, Taenia saginata*, and *Schistosoma haematobium*.

The following organisms could not be recovered from the faeces of cockroaches after experimental feeding: Active stages of the Entamoebae specified, eggs of *Apiochaeta xanthina*, Gonococci, and (in two experiments in each case) *Bacillus typhosus, paratyphosus*-B, and *dysenteriae* (Flexner-Y).

A. A.

Defiel (Florence). **An Experimental Investigation of the Supposed Poisonous Qualities of the Colorado Potato Beetle,** *Leptinotarsa decemlineata.*— *Amer. Jl. Trop. Med.* Baltimore. 1922. Nov. Vol. 2. No. 6. pp. 559–567.

The Colorado beetle, *Leptinotarsa* (or *Doryphora*) *decemlineata*, sufficiently notorious for its ruinous effects on potato crops, has been further discredited with the possession of poisonous properties. Here are recorded the results of various experiments with man, rats, chickens, and frogs, which furnish no support whatever for the belief that this beetle is poisonous or possesses even vesicating properties.

A. A.

Hashimoto (Takashi) & Ogiwara (Heibu). [**On the Poisonous Moth and Moth Poison Dermatitis that occurred in Chiba Prefecture in 1921.**]—*Hifuki Hitsunyokikwa Zasshi* (*Jl. of Dermat. & Urol.*). 1922. June. Vol. 22. No. 6. [Summarized in *Japan Med. World*. Tokyo. 1922. Nov. 15. Vol. 2. No. 11. p. 333.]

It is stated that the authors came to the conclusion that the dermatitis was caused by the mechanical irritation of the hairs of the moth and not by any poisonous secretion. [In some African tiger-moths (Anaphe spp.) the offensive barbed hairs are tubular and have a vesiculous base, as if for the storage and passage of a secretion.]

A. A.

Cawston (F. G.). **Antimony in Sand-Worm Disease.** [Correspondence.]—*S. African Med. Rec.* 1923. Feb. 24. p. 94.

The cause of "sand-worm" rash seems not to have been investigated; the author on two occasions has observed insects "somewhat resembling fleas." The rash appears as spreading vesicles, and is very resistant to treatment. The application of iodine may cause the vesicles to suppurate. Recently the author cured a case that had been vainly treated for 18 months, with a few intramuscular injections of 1·5 cc. of colloidal antimony and sulphur, and since then he has heard of a case of rapid disappearance of the rash after two intravenous injections of half a grain of tartar emetic.

A. A.

Walch (E.). **Over *Trombicula deliensis*, n. sp. vermoedelijke overbrengster der Pseudotyphus, en andere Trombiculae van Deli. (Eerste Mededeeling.)** [On *Trombicula deliensis*, n. sp., a Possible Transmitter of Pseudotyphus, and on the other Trombiculae of Deli. (First Communication.)]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 5. pp. 530–570. With 29 text figs. [English summary, p. 568.]

Seven species of Trombicula, six of them said to be new, have been found in Deli and are here characterized and well figured. One of the new species, *T. deliensis*, is conjectured by the author to be the transmitter of pseudotyphus, a variety of Japanese river fever; it is the only species known locally to attack both man and rodents.

A. A.

Ancona (Giacomo). **Asma epidemico da "Pediculoides ventricosus."** [Epidemic Asthma due to *Pediculoides ventricosus*.]—*Policlinico.* Sez. Med. 1923. Feb. 1. Vol. 30. No. 2. pp. 45–70.

A large number of those engaged in the milling industry at Barberino suffer from asthma, together with a roseolar, pruriginous eruption, especially of the neck, chest and arms. It was found that those working with sound grain were not affected, but only if the grain was musty from *Tinea granella* and also attacked by *Pediculoides ventricosus*.

By a series of experiments the author showed that the actual cause of the asthma was the last-named. He made extracts in various ways—in saline, in ether, with the mite alive or dead—and in those who suffered from the asthmatic condition he obtained a skin reaction of an anaphylactic type—cutaneously and intracutaneously. Extracts of the sound grain, or of that affected by *T. granella* only, yielded negative results.

Sensitization *may* be due to ingestion of bread made with the damaged flour, but the author is of opinion that it arises by inhalation or by action of the parasite on the nasal mucous membrane.

H. Harold Scott.

Mackenzie (J.). **Endoparasitic Acari as a Cause of Urinary Diseases. With Notes on Several Cases.**—*Jl. Roy. Army Med. Corps.* 1922. Nov. Vol. 39. No. 5. pp. 339–344. With 1 text fig.

Hirst (Stanley). **Report on the Mite (*Tarsonemus floricolus*, Canestrini and Fanzago) found by Lieut.-Col. J. Mackenzie, R.A.M.C., in Human Urine.**—*Ibid.* pp. 344–347. With 1 text fig.

Notes of six cases of urinary disorder associated with the indubitable existence of mites in the urine. In four of them the mite was a Tarsonemus, specifically identified in one instance as *T. floricolus*, and in another instance accompanied with the common sugar-mite (Glycyphagus); in the other two cases the kind of mite was not accurately determined. In four of the cases the predominant symptom was inveterate nocturnal enuresis, and in all of them a constant phenomenon of the urine—in addition to mites and their debris—was a black or blackish detritus thought to be the mites' excrement. In most of the cases localized pain was only an occasional symptom;

but in one case there was a history of " trench nephritis " and persistent aching of head and back and limbs, and in another there was haematuria along with pus, and with pain at the tip of the penis towards the finish of micturition.

A. A.

i. Godoy (Alcides) & Pinto (Cesar). **Da presença dos Symbiontes nos Ixodidas.**—*Brazil Medico.* 1922. Nov. 25. Year 36. Vol. 2. No. 47. p. 335.

ii. Bambaren (Carlos A.). **Estudio de la larva parásita de un acaro (*Leptus japa*, Ribeyro-Bambarén) de la montaña del Perú.** [The Parasitic Larva of *Leptus japa*, Ribeyro-Bamberen, from the Highlands of Peru.]—*Crónica Méd.* Lima. 1922. Aug. Vol. 39. No. 710. pp. 281–287. With 2 text figs.

iii. Evans (A. M.). **The Occurrence of *Xenopsylla astia*, Roths., in West Africa.**—*Ann. Trop. Med. & Parasit.* 1922. Dec. 30. Vol. 16. No. 4. p. 449.

iv. Rigollet. **Au sujet de la répartition de la puce en Afrique Occidentale Française.**—*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. p. 1018.

v. Pawlowsky (E.) & Stein (A.). **Taches bleues et glandes salivaires du *Phtirius inguinalis*.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 826–827.

vi. Cornwall (J. W.). **Note on the Salivary Glands and Sucking Apparatus of *Cimex rotundatus*.**—*Indian Jl. Med. Res.* 1923. Jan. Vol. 10. No. 3. pp. 687–691. With 4 plates.

vii. Neiva (Arthur) & Pinto (Cezar). **Estudo actual dos conhecimentos sobre o genero *Rhodnius*, Stal, com a descripção de uma nova especie.**—*Brazil-Medico.* 1923. Jan. 13. Year 37. Vol. 1. No. 2. pp. 20–24.

i. A very brief notice of a micro-organism having a predilection for the ovaries of certain species of Ixodidae and presumed to be not a parasite but a symbiote. The authors name it " Ixodisymbionte," and note that it was first discovered by R. Koch in Rhipicephalus.

ii. A description of a very common Trombidiid larva, known locally as Japa or Isangue, which, by its burrowing, causes severe pruritus. It lives in the grass of the Peruvian highlands, but not in the plains. The adult is not known, but the larva is recorded as a new species under the name of *Leptus japa*.

iii. *Xenopsylla astia* observed on *Mus decumanus* and *Cricetomys gambianus* in April.

iv. A request for collections of fleas of French West Africa to be sent to the author at the Institut de Biologie.

v. The authors succeeded in producing the blue spots on the skin characteristic of the attacks of the crab-louse by injecting the secretion of the glands called by them the third pair of salivary glands of that insect.

vi. The salivary glands of the bed-bug are described and figured in many transverse sections and diagrammatic drawings. For steadying the bug for dissection the plan here recommended is to fix it by its legs and ventral surface to a block of paraffin, by melting. The dorsal chitin being then dissected off, the salivary glands and ducts can be conveniently examined with a 4 mm. objective.

vii. The new species, *Rhodnius domesticus*, from Brazil, frequents houses.

A. A.

Sambon (Louis Westenra). **A Synopsis of the Family** *Linguatulidae.* —*Jl. Trop. Med. & Hyg.* 1922. Dec. 15. Vol. 25. No. 24. pp. 391–428. With 25 text figs.

This final instalment of Sambon's valuable monograph contains, besides descriptions and figures and critical appreciations of many new species, a classified catalogue of the Linguatulida, a list of the known species arranged according to their respective hosts and their geographical distribution, a classified catalogue of hosts with their respective Linguatulid parasites, and an index of names and synonyms.

A. A.

Pons (R.) & Noc (F.). **Porocéphaliase ganglionnaire et Lymphadénie tuberculeuse á évolution rapide chez un Tirailleur Sénégalais.** —*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 951–954.

A case of acute tuberculosis in a native Senegalese soldier serving in France. Post-mortem examination showed that the infection was restricted to the lymphatic system—all the glands everywhere being enlarged. Some of the glands were also infested with larvae of *Porocephalus* (*Armillifer*) *armillatus*, and here again infestation was restricted to lymphatic glands. Though cases of acute tuberculous lymphadenitis are well known apart from any other antecedent or concurrent infection, the possibility that in this particular case the primary infestation with Porocephalus larvae may have been a predisposing cause must not be dismissed.

A. A.

Oliver (Thomas). **Adder Bite.**—*Brit. Med. Jl.* 1922. Dec. 9. pp. 1114–1115.

Case of a woman, aged 54, bitten above the left ankle by an adder. An hour afterwards the wound was "dressed" and a stimulant was given, severe vomiting and diarrhoea having occurred. Subsequently the patient collapsed and "felt extremely ill," and the leg, which was red but not very tender, was found to be swollen up to the knee. The leg was dressed with ichthyol and glycerine. Vomiting and diarrhoea continued at intervals for "a few hours." The patient gradually got better, but it was three months before the swelling of the ankle disappeared.

A. A.

Taylor (Mark R.). **A Case of Adder Bite.**—*Brit. Med. Jl.* 1923. Mar. 3. p. 375.

The interest of this case is that it illustrates the delay that sometimes occurs in viperine intoxication between the infliction of the bite instilling the venom and the generalization of symptoms.

A. A.

YAMAGUTI (K.). **Zusammenfassung meiner vergleichenden serologischen Untersuchungen der Toxine von Giftschlangen auf der Insel Formosa.** [Comparative Serological Investigations of the Toxins of Poisonous Snakes in Formosa.]—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa*). 1922. July. No. 223. German summary, pp. 5–19. [Japanese version, pp. 39–50.]

In Formosa during the 15 years 1904–1918 the annual number of accidents from venomous snakes has averaged 272 and of deaths 20. The venomous snakes of the island include four species of *Lachesis*, *Ancistrodon acutus*, Russell's viper, a Bungarus, the cobra, *Callophis swinhoei*, and a Hemibungarus. Half of the accidents are caused by *Lachesis gramineus*, and another quarter by *Lachesis mucrosquamatus*. Of the comparatively few fatal cases, Bungarus has accounted for 24 per cent., Ancistrodon for 23 per cent., cobra for 17 per cent., *Lachesis mucrosquamatus* for 9 per cent., and *L. gramineus* for only 1 per cent. The venom apparatus and the action of the venom of all these snakes is described at length.

A. A.

PACELLA (G.). **Action des venins de serpents sur les centres bulbaires.** —*C.R. Soc. Biol.* 1923. Feb. 10. Vol. 88. No. 5. pp. 366–367.

The effects of the venom of *Naja tripudians*, *Vipera russellii*, *Crotalus terrificus*, and four species of Lachesis, introduced—by a described technique—into the bulbar centres direct, are here described, and they appear to differ considerably from the obvious effects of most of them when introduced into the circulation or subcutaneously. There is with most of them a rapid and persistent rise of arterial pressure and (particularly with cobra venom) marked bradycardia; respiration is at first unaltered or slightly accelerated, then becomes less frequent, and finally stops, often after a Cheyne-Stokes phase; no motor symptoms are observed (except with the Crotalus venom), and often no alteration of the coagulability of the blood or of the excitability of phrenic and sciatic nerves. Death supervenes on apnoea of some duration.

A. A.

i. KRAUS (R.) & BOTELHO (Rocha). **Uma nova contribuição á avidez das anti-toxinas. Soro anti-escorpionico. A provo de anti-toxinas principaes e secundarias, pela avidez. (2a Communiçãcio.)** —*Brazil Medico*. 1923. Feb. 10. Year 37. Vol. 1. No. 6. pp. 69–72. With 4 text figs.

ii. —— & ——. **Sobre o soro anti-elapineo. Nova contribuição para o conhecimento de anti-toxinas e co-anti-toxinas. (3a Communicação.)**—*Ibid.* Feb. 17. No. 7. pp. 81–82.

i. A series of interesting experiments with scorpion venom and scorpion antivenene is here recorded, from which the authors conclude that, just as there appear to exist primary and secondary agglutinins and partial bacterial antitoxins, so there appear to be primary and secondary antitoxins of animal origin, of which the former act at once and the latter only after some delay. From among the present experiments may be selected one showing that scorpion antivenene can, after contact for an hour at 37° C., neutralize four lethal doses of *Lachesis lanceolatus* venom.

ii. Further experiments here recorded show that antivenene of *Elaps frontalis* can neutralize four times its equivalent of *Elaps corallinus* venom, after contact for an hour at 37° C.; and also, after contact for an hour at 32° C., can neutralize a minimum lethal dose of *Crotalus terrificus* venom, although the Crotalus antivenene does not neutralize the Elaps venom. The Elaps antivenene has no effect under any circumstances on Lachesis venom.

A. A.

Bardier (E.) & Stillmunkès (A.). **Intoxication scorpionique et syncope adrénalino-chloroformique.**—*C.R. Soc. Biol.* 1923. Mar. 3. Vol. 88. No. 8. pp. 559–561.

The venom of the Algerian scorpion, although its cardiovascular effects considerably resemble those of adrenalin, does not, like adrenalin, cause fatal syncope in the course of chloroform anaesthesia; on the contrary, scorpion intoxication inhibits this effect of adrenalin.

A. A.

i. Novaro (Vincent). **Action toxique du venin de Crapaud pour l'homme et les animaux.**—*C.R. Soc. Biol.* 1922. July–Sept. Vol. 87. No. 28. pp. 824–826.

ii. ——. **Action pharmacodynamique du venin de Crapaud.**—*Ibid.* 1923. Feb. 10. Vol. 88. No. 5. pp. 371–373.

i. In the author's country toads are still used in the treatment of toothache and herpes. He tells of an ordinary case of facial herpes, not at all serious to begin with, which suddenly became frightfully exacerbated locally, went on to paralysis of the lower limbs, convulsions and opisthotonus, and ended fatally. It transpired that living toads had been applied to the skin lesions.

The author accordingly made some experiments with the granulous venom of the toad [the milky venom secreted by the animal's cutaneous parotid glands]. He strapped living toads on to the abdomen of dogs and excited the secretion of the venom. If the dog's skin were scarified, bradycardia, intense mydriasis, salivation, vomiting, respiratory disturbances, paralysis and convulsions quickly followed, and ended in death within an hour. If the dog's skin were merely excoriated the results of contact with the parotid glands of the living toad were local ulceration and suppuration and general cachexia from which recovery was slow.

The expressed parotid (cutaneous) venom of Buenos Aires toads is fatal in small doses subcutaneously to pigeons, rabbits, guinea-pigs, etc., and in (comparatively) very large doses to frogs and rats; whereas the toad itself is quite indifferent to the (comparatively) enormous dose of 500 mgm.

ii. An instalment containing an interesting account of the venomous secretion of the "parotid" gland of the toad, *Bufo marinus*. [The parotids of the toad form the cutaneous excrescences behind the eye and above the tympanum.] 25 mgm. of the fresh venom per kilogm. of body weight are fatal to the dog by intravenous injection. Most of the effects of the venom depend upon the 1–3·5 per cent. of adrenalin that it contains. But, although the venom gives the reactions and produces most of the obvious effects of adrenalin, it

also contains some independent and even contradictory principles. Thus it causes convulsions when injected subcutaneously, and it contracts the isolated intestine of the guinea-pig. Generally it does not modify the coagulability of the blood ; when applied to a wound it causes congestion and inflammation ; and when it comes in contact with the conjunctiva, though it produces a transient pallor, it leads to protracted conjunctivitis and periscleritis.

A. A.

Aoki (T.). **Ueber Medusenstichkrankheit.** [Medusa-sting Sickness.]—*Japan Ztschr. f. Dermat. u. Urol.* 1922. Oct. Vol. 22. No. 10. German Autoreferat, pp. 71–72. With 1 plate. In Japanese, pp. 835–891.

The venoms of Medusae differ greatly in potency. Those of the Scyphomedusae (Acraspedote medusae) and Ctenophora cause but slight or transient symptoms, but those of the Hydromedusae (Craspedota) have serious effects.

This paper deals with the venom of *Olindioides formosa*, one of the latter group. Contact with this medusa is followed by sudden burning pain and erythema, or, in some cases, severe urticaria. In the most severe cases restlessness, faintness and extreme prostration supervene with diffused muscular pains, dyspnoea, and cardiac distress, and these symptoms generally last 24 hours.

A. A.

i. Kraus (R.). **Biologische Studien ueber Gifte der Kopfdrüsen ungiftiger Schlangen. (I. Mitteilung.)** [Biological Studies of the Venom from the Head Glands of some Harmless Snakes.]—*Muench. Med. Woch.* 1922. Sept. 1. Vol. 69. No. 35. p. 1277.

ii. Kaiser (Ludwig). **Ueber Giftschlangen und Anti-schlangengiftserum-Bereitung in Niederlandisch-Ostindien.** [Poisonous Snakes and the Preparation of Antivenom Serum in Dutch East Indies.]—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. pp. 509–524. With 3 plates.

iii. Bolognesi (G.). [**Experimental Research on Snake Bites.**]—*Arch. Franco-Belges de Chirurgie.* Brussels. 1922. Aug. Vol. 25. No. 11. p. 1010. [Summarized in *Jl. Amer. Med. Assoc.* 1923. Feb. 10. Vol. 80. No. 6. p. 434.]

i. A retrospect on the subject of the venoms of the Aglyph and Opisthoglyph Colubridae.

ii. This paper contains some interesting statistics that illustrate the difficulties of immunizing horses against snake-venom for the production of antivenene.

iii. Merely a statement that Bolognesi's aim is to draw " attention to the local histopathological findings " in snake-bite.

A. A.

Baker (Frank Collins). **The Molluscan Fauna of the Big Vermilion River, Illinois.**— *Illinois Biological Monographs.* 1922. Apr. Vol. 7. No. 2. 126 pp. With 15 plates.

The object of the survey of which the results are here recorded was to investigate the rapid depletion of the local supply of freshwater mussels. The survey took account of everything that appeared to affect molluscan life. Numerous pulmonate Gastropods, including

four species of Planorbis, are included in the fauna of the river. The point of general interest is that in the Big Vermilion River, which is 90 miles long, sewage pollution was found to have killed all clean water life for a distance of 14 miles, and to have deteriorated the environment to a distance of 20 miles, from the source of pollution. Sewage pollution includes contamination both from industries and from " organic " sewage, the latter, when crude and concentrated, being very injurious to aquatic life. The paper contains also a good deal of recorded evidence of the deadly effect of sewage in other neighbouring rivers.

A. A.

Edwards (F. W.). **A Synopsis of Adult Oriental Culicine (including Megarhinine and Sabethine) Mosquitoes. Part II.**— *Indian Jl. Med. Res.* 1922. Oct. Vol. 10. No. 2. pp. 430–475. With 3 plates.

Ghosh (Ekendranath). **On a New Ciliate,** *Balantidium blattarum,* **sp. nov., Intestinal Parasite in the Common Cockroach** (*Blatta americana*).— *Parasitology.* 1922. Apr. Vol. 14. No. 1. pp. 15–16. With 1 text fig.

Hoffmann (W. H.). **Die Chrysopsfliegen und ihre Bedeutung für den Tropenarzt.** [Flies of the Genus Chrysops and their Significance in Tropical Medicine.] *Arch. f. Schiffs- u. Trop.-Hyg.* 1922. Aug. Vol. 26. No. 8. pp. 244–248. With 1 text fig.

de Mello (Froilano) & Suctancar (Crisna). **Morphologie et cycle évolutif d'un** *Herpetomonas* **de l'intestin d'***Hemidactylus Brookei* **Gray.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 795–797. With 1 text fig.

Park (G. W.). *Gambusia affinis,* **the Natural Agent for destroying Mosquito Breeding in Texas.**—*Texas State Jl. Med.* 1922. Apr. Vol. 17. No. 12. pp. 579–581. With 2 figs.

Senevet (G.). **Les espèces Algériennes du Genre Hyalomma.**— *Arch. Instituts Pasteur de l'Afrique du Nord.* 1922. Sept. Vol. 2. No. 3. pp. 393–418. With 7 text figs.

Taliaferro (W. H.) & Becker (Elery R.). **The Human Intestinal Amoeba,** *Iodamoeba williamsi.* **and its Cysts (Iodine Cysts).**— *Amer. Jl. Hyg.* Baltimore. 1922. Mar. Vol. 2. No. 2. pp. 188–207. With 2 plates & 3 text figs.

LEPROSY.

JANIN (F.). **La lèpre à la surface du globe.**—*Rev. Méd. et Hyg. Trop.* 1922. Nov.–Dec. Vol. 14. No. 6. pp. 225–227.

The most striking feature in the distribution of leprosy is that in the tropics there is a continuous belt of the disease right round the globe, while in the temperate zone disseminated foci are found at variable intervals. In the middle ages the disease was widespread over Europe. The decrease there is in part due to the rigorous measures taken against leprosy, but no such decrease has occurred in the tropical zone, and the author suggests that the greater prevalence in the tropics may be associated with deficiency of calcium in the rice diet, so largely consumed in that area, in contrast with the more mineralized wheat diet in the temperate zone.

L. Rogers.

VERNET (Isaac). **O serviço clinico da lepra no Hospital S. Sebastião em 1921.**—*Rev. Med.-Cirurg. do Brasil.* 1922. Feb. Vol. 30. No. 2. pp. 65–71.

In October, 1921, two wards of the Hospital S. Sebastião (Rio de Janeiro) were set apart for the reception and isolation of 40 male and 30 female patients suffering from leprosy. During the last three months of 1921 the figures showed :

Admitted		141
Discharged	24	
Died	22	65
Transferred	19	
In hospital		76

The patients "discharged" are not to be regarded as "cured." Some were transferred to other states of the Republic and placed under the observation and control of the local "Inspectoria de Prophylaxia Rural," while others, possessed of resources, were allowed to go to their homes, remaining, of course, under strict official medical observation. The 19 "transferred" patients were removed to other hospitals or to other wards of the Hospital S. Sebastião, repeated bacteriological and clinical examinations having failed, in their case, to reveal evidence of leprosy.

F. S. Arnold.

MEIRELLES (Eduardo). **Da lepra infantil no Rio de Janeiro.**—*Arch. Brasileiros de Med.* 1922. Dec. Vol. 12. No. 12. pp. 975–991.

Several interesting tables of statistics are given from various institutions showing the numbers of children of tender age who are leprous. The main facts to be gleaned from these data are : that white children are more frequently affected than half-castes or natives ; that a large majority show the cutaneous forms, very few the nervous ; that female cases preponderate ; and that the condition is rare in the first four years of life, but the numbers increase year by year after the seventh or eighth.

H. Harold Scott.

Esguerra (Carlos). **El problema de la lepra en Colombia.** [The Problem of Leprosy in Colombia.]—*Repert. de Med. y Cirug.* 1922. Mar. Vol. 13. No. 6. (No. 150.) pp. 291–305.

Thirty years ago a resolution was carried, after discussion by the National Academy of Medicine, that lepers in Colombia should be removed to some island in the Atlantic or Pacific. Investigation revealed at least 10,000 persons to be provided for, so that for financial reasons the project was abandoned. Instead, the existing lazarettos were utilized, while hospitals were founded in the departments most affected for dealing with those who could not or would not be admitted to the former. In 1917–18 a law was passed to the effect that all lepers were to be segregated in national lazarettos, irrespective of their social or pecuniary position, or of the form or stage of the disease.

In considering the subject afresh, the author starts by drawing comparisons between the infectivity of leprosy, tuberculosis, syphilis and other diseases, incidentally pointing out that, apart from the fact that in the middle ages the term "leprosy" probably included many cases of syphilis, lupus and contagious skin affections, the disease itself is not of such a virulent type as formerly, and that, therefore, the harsh measures of bygone days, which are not mitigated to a great extent even now, are no longer necessary.

The suggestion brought forward by Dr. Esguerra is that departmental and municipal bodies and voluntary societies should work together, the two former improving and maintaining "national lazarettos" for poor patients, providing them with ground for agricultural employment and with schools for leprous children, while the healthy children should attend other schools and be subjected to periodical medical examination, so that any who show evidence of the disease may be at once transferred.

The San Lazaro societies would, in association with municipal and other local medical practitioners, have more particular care of the better class patients, who would be allowed to live in houses with their families, if they too were infected. The estimated cost of carrying out these suggestions is considerably less than by the present system of an expensive department administered centrally.

H. Harold Scott.

Ignacio Uribe (Jose). **Sobre Lepra.** [Leprosy.]—*Repert de Med. y Cirug.* Bogota. 1922. Dec. Vol. 14. No. 3. (No. 159.) pp. 90–99.

Leprosy has been rife in Colombia for many years. Statistics were started in 1905 when there were recorded to be 4,296 cases, of which 2,359 were females and 1,937 males. In 1922 the numbers were 6,568, of whom 5,440, or 82·8 per cent., were segregated, and of these 2,845 were males and 2,595 females. As regards the type of disease 60 per cent. were of the nodular variety, 30 per cent. nervous, and 10 per cent. mixed.

The system adopted for segregation is the formation of "colonies with hospitals"; each colony has a regular administration with a chief magistrate, judges, police service, and so forth.

H. Harold Scott.

VALVERDE (Belmiro). **Estado actual da lepra no Brasil.**—*Arch. Brasileiros de Med.* 1921. Sept. Vol. 11. No. 9. pp. 702–729.

The author begins by classifying the states of Brazil as follows, according to the prevalence within them of leprosy :

1. States in which leprosy is rare : Parahyba, Piauhy, Rio Grande do Norte, Alagoas, Seraipe, Bahia, Espirito Santo and Matto Grosso.

2. States in which leprosy is frequent : Amazonas, Ceara, Pernambuco, Rio de Janeiro, Capital Federal, Parana, Goyaz, Santa Catharina and Rio Grande do Sul.

3. States in which leprosy is " abundant " : Para, Maranhao, Minas and S. Paulo.

The states are then considered in succession, a succinct account being given of the position as regards leprosy in each. It would appear that whereas the state of Bahia was formerly one of the principal foci of leprosy, the disease there is now rare, so much so that the author asserts that, born and brought up in the state as he was, he has never seen a case of leprosy in the interior and but few in the capital. The change, according to the author, is not to be attributed to any special precautions adopted in the state, of which there have been none. The history of Bahia is in marked contrast to that of the other states, in which the position as regards prevalence of leprosy has grown steadily worse. It would appear that little or nothing has been or is being done by government to deal effectively with the situation, which is already one of great gravity. In the absence of official statistics it is impossible to do more than attempt an approximate estimate of the total number of lepers in Brazil. The author's estimate is 15,000. Others quoted by him vary from 5,000 (Octavio de FREITAS) to 30,000 (Adolpho LINDEMBERG).

F. S. Arnold.

VERNET (Isaac). **Considerações em torno da prophylaxia social da lepra.**—*Brazil-Medico.* 1922. July 29. Year 36. Vol. 2. No. 30. pp. 61–64.

The author estimates the number of patients in Brazil suffering from leprosy at about 15,000. Little has been done up to now in the direction of an efficient handling of the problem in public health presented by the existence of this large body of sufferers. Two leper colonies are mentioned as already existing and four others are being established. The author speaks very highly of " Chaulmoogrol," basing his verdict on his experience as chief physician to the two leper wards of the S. Sebastian Hospital. The drug, he states, caused an intense bacteriolysis, the signs of which are obvious under the microscope. So uniform is the phenomenon in cases of leprosy that Dr. Paulo PROENÇA, Director of the Bacteriological Laboratory of the Inspectorate of Leprosy, states that the cases treated by chaulmoogrol can be picked out unfailingly by the microscopist from those not so treated. The author has given 3,000 injections of chaulmoogrol during the period of his charge of the leprosy wards and states that in that number there were only 16 cases of reaction at all severe or prolonged.

F. S. Arnold.

Tanganyika Territory. **Annual Medical Report** [Shircore (J. O.), Acting P.M.O.]. **Annual Report of the Sanitation Branch of the Medical Dept.** [Scott (R. R.), Medical Officer of Health]. **Report of the Dar-Es-Salaam Laboratory. For the Year 1921.** [Leprosy, pp. 13–20 and 73–74.]

The Germans' policy of segregating lepers in suitable places has been continued under the British administration, 39 camps being occupied in 20 districts. Reports from 11 stations show that at least 50 per cent. are self-supporting, with several square miles of cultivated land attached; £248 was spent on providing for the maimed. The district medical officers visit the camps whenever possible and several are cared for by various missions, a total of £3,880 being expended on the 3,920 known lepers. The concentration of the lepers in a smaller number of large camps is under consideration, but presents many difficulties in such an extensive territory, and until this is done the new forms of treatment, on the efficacy of which "most authorities are agreed," cannot be regularly undertaken, while as the present system of segregation depends on merely a nominal and moral control, care must be taken to avoid painful methods which might lead to extensive desertions. The seriousness of the problem is evident from the statement that "Leprosy is possibly more prevalent in this Territory, if expressed as cases per thousand of inhabitants, than in any other part of the British Empire," last year's report having shown that the incidence of segregated lepers is 7 per mille, "while if those at large be included, the case incidence is probably nearly double that figure." The opinion is expressed that if funds were available for complete segregation and effective treatment, "there does not appear a shadow of doubt that in the course of a generation the leprosy-incidence could be so reduced in Tanganyika by effective means of isolation as to render the disease, to all intents and purposes, non-existent."

L. R.

Serra (Alberto). **La lepra sarda fino al 1921 (rassegna statistica, epidemiologica, considerazioni profilattiche).** [Leprosy in Sardinia. Statistical and Epidemiological Review. Prophylaxis.]—*Giorn. Ital. d. malattie veneree e della pella.* 1922. June 29. Vol. 63. No. 3. pp. 767–788.

Leprosy was first recorded in Sardinia in 1896. In 1902 there were 43 cases, five years later there were 50, and in 1918, 67. During 1921 30 deaths occurred from this disease and 47 were living. Of these 8 were of the nodular type, 13 of the mixed, and 26 of the nervous forms. Fourteen of them showed mutilations. The ages of the patients varied between 17 and 72 years.

The author points out that necessary measures against leprosy are more rigorous and more rationally carried out in the colonies than in Europe, and the advantages of adherence to the recommendations of the Conferences at Vienna (1892), Berlin (1904), and Bergen (1909)—compulsory notification, isolation of the sick, separation of healthy children from leprous parents, prohibition of the infected from engaging in trades which might tend to the dissemination of the disease. In Norway, where these measures are more strictly attended to, the number of lepers has been reduced from 2,833 in 1856 to 438 in 1907, while from Denmark leprosy has apparently been banished altogether.

In Italy the problem is not attacked with sufficient energy. The fact must be borne in mind that leprosy is a parasitic disease and that the leper is a dangerous carrier, especially in the florid nodular form, capable of transmitting his disease by contact, direct or mediate. The only adequate protective measure is isolation and, since the period of segregation will probably be of long duration, the asylum must be made as attractive as possible and suitable occupation must be provided for the untortunate sojourners. Finally, to eradicate the disease from Italy, he recommends the establishment of four or five separate leper colonies, one in the endemic area of Riviera Ligure, one in Central Italy at Toscana or Romagna, one at Lecce or Taranto, one in Sicily, and one in Sardinia. At the same time notification and segregation must be stringently enforced.

H. Harold Scott.

Gouzien & Abbatucci. **Note au sujet de la prophylaxie de la lèpre en France.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 827–830.

In spite of numerous leprosy-infected persons returning to France from her tropical possessions, no legislative powers exist for dealing with them. Some are taken temporarily into the hospital of the Pasteur Institute, and a number have been treated in the St. Louis hospital, although in 1919 a Commission of Public Health reported on the subject, and as long ago as 1909 a Committee of the Société de Pathologie Exotique drew attention to the danger.

L. R.

Public Health Reports. 1922. Dec. 22. Vol. 37. No. 51. pp. 3151–3154.—**Regulations governing the Care of Lepers.**

The United States Secretary of the Treasury has published regulations for the information of health officers regarding admissions to and discharges from the national leprosarium at Carville. These provide for reports by boards of not less than three medical officers to confirm the diagnosis on arrival and to authorize any discharge after recovery. Six negative monthly bacteriological examinations are required before removal from the portion of the reservation used by patients with active leprosy, and 12 further monthly negative reports before the release of such patients, after which the local health officer where the patient resides shall make clinical and bacteriological examinations every six months for a further period of three years. All very wise procedures.

L. R.

van Driel (B. M.). **Het parole systeem bij lepra.** [The Parole System in Leprosy.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 5. pp. 527–529.

Van Driel criticizes the parole system in use in Hawaii, which de Langen (this *Bulletin*, Vol. 20, p. 151) described as attractive. There exists no certainty that those going on parole do not excrete the bacillus and there is in practice no control of the accommodation and habits of the parole lepers. Patients as well as the public are being deceived in this way. Van Driel considers the parole system

to be a premature consequence of the enthusiasm about the results of the new treatment. Isolation, the only effective measure in combating leprosy so far, is made imaginary by the parole system.

W. J. Bais.

Denney (Oswald E.) & Hopkins (Ralph). **Specified Leprous Reactions and Abnormal Vaccinia induced in Lepers by Smallpox Vaccination.**—*Public Health Rep.* 1922. Dec. 22. Vol. 37. No. 51. pp. 3141–3149. With 5 figs.

Vaccinations against smallpox were performed in the United States National Leprosarium on 118 lepers and 105 healthy attendants with normal results in the latter, but abnormally severe reactions in most of the lepers and alarming symptoms in 11 of them. The inflammatory areola during the pustular stage spread in a few days over the whole arm, with great swelling and pain and fever (39°–40° C.) for from one to three weeks, and the ulcers took one or two months to heal. In nodular cases the old leprous lesions showed inflammatory changes, followed by the appearance of numerous similar new tubercles and infiltrated patches containing numerous lepra bacilli, up to about the twelfth day, and then rapidly returning to the pre-vaccination state. In maculo-anesthetic cases ulnar neuritis with ordinary leper fever appeared usually in the vaccinated arm, frequently in both arms and rarely only in the unvaccinated one, while mixed cases showed a combination of both types of lesion. These febrile attacks occurred in 51 of the 71 lepers, which is far more frequent than the ordinary incidence ; they took place in cases which had not previously shown them, having clearly been excited by the vaccination, so that the symptoms of both diseases appear to be exaggerated when lepers are vaccinated, while the appearances are very similar to the reactions occurring during the treatment of leprosy by iodides, chaulmoogrates, etc., and often followed by improvement. It is of interest to note that in every case the fresh lesions completely subsided and some of the patients appeared to be improved ; they will be carefully watched.

L. R.

Hasseltine (H. E.). **The Effect of Vaccinia on Leprosy.**—*Public Health Rep.* 1923. Jan. 5. Vol. 38. No. 1. pp. 1–10.

The vaccination of lepers at the Kalihi Hospital in Honolulu has been followed by a more or less acute outbreak of leprous eruptions similar to those occasionally seen in the course of leprosy, and to those above described, and it is suggested that the early reports of leprosy following vaccination in Hawaii may sometimes have been only similar reactions.

L. R.

Valverde (Belmiro). **Manifestação inicial da lepra.** [The Primary Manifestation of Leprosy.]—*Arch. Brasileiros de Med.* 1922. Dec. Vol. 12. No. 12. pp. 965–974.

In many cases the primary lesion of leprosy is not discoverable ; in the majority of the remainder the nasal mucous membrane appears to be the portal of entry of the bacillus, but in a few cases it may

enter by the skin. A case is recorded in which there was a localized leproma in the right temporal region; this was excised and during the succeeding eight months the patient was watched, but there was no generalization and no local recurrence.

H. Harold Scott.

VAN DRIEL (B. M.). **De uitkomsten van een oogonderzoek bij 350 lepreuzen.** [The Results of an Ophthalmological Examination of 350 Lepers.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1922. Vol. 62. No. 6. pp. 770–814.

Van Driel examined the eyes of 350 inmates of the leper colony, Laoe si Momo (E.C. Sumatra). For practical reasons the examination was confined to the externally visible parts of the eye and its adnexa. The results are given in tabular form (17 pp.).

Apart from affections which may readily be attributed to other causes (conjunctivitis, leucoma from smallpox, traumatic scars, etc.), the author describes as ocular manifestations of leprosy: a hanging fold of the upper lid (blepharochalazis), episcleritis, the ivory-like pannus leprosus round the whole cornea, thin maculae and nebulae corneae, remains of iritis and irido-cyclitis (Descemet spots, pigment on lens capsule), though acute iritis was not very often met with. Keratitis punctata superficialis is considered to be a complication (infection from the nose, which is often the seat of secondary inflammation).

Ophthalmic leprosy, the author thinks, is endogenous in its origin and not brought on per contiguitatem from the surrounding affected areas of the skin. The central localization of the leprous affection of the eye is in favour of this opinion. Leprosy of the eye seldom ultimately causes blindness by chronic relapsing irido-cyclitis.

W. J. Bais.

LEVITT (Marcus J.). **A Case of Leprous Keratitis Punctata.**—*New York Med. Jl. & Med. Record.* 1922. Oct. 4. Vol. 116. No. 7. pp. 376–379.

A man, 37 years of age, was under treatment for recurrent keratitis punctata affecting the two eyes at eight-years' interval. On careful enquiry, he was found to be suffering from a few leprous nodules on the lower part of the body and legs only, and under intramuscular injections of chaulmoogra oil both the skin and eye lesions greatly improved. The difference between the leprous and the ordinary interstitial keratitis is that the membrane in the former becomes white and thickened.

L. R.

ARCHIBALD (R. G.). **An Unusual Type of Nodular Leprosy in the Sudan.**—*Ann. Trop. Med. & Parasit.* 1922. Dec. 30. Vol. 16. No. 4. pp. 341–346. With 1 plate.

A typical case of nodular leprosy of one-year's duration, with small shotty tubercular lesions, some slightly umbilicated, and thickening of the ears. It was not recognized as leprosy until a microscopical examination was made, the disease not being very commonly seen at Khartoum.

L. R.

DELAMARE (Gabriel). **Hyperostoses lépreuses du tibia et du péroné.**—*Bull. Acad. Méd.* 1922. Nov. 14. Vol. 88. 3rd Ser. No. 37. pp. 247–248.

A case of nodular leprosy free from all signs of syphilis is reported in which thickened nodes were present in the tibia and fibula.

L. R.

MALLANNAH (S.). **Infection by *Bacillus pyocyaneus* simulating Leprosy.**—*Brit. Med. Jl.* 1922. Dec. 23. p. 1223.

A man with perforating ulcers of his foot of one-year's duration, and several white discoloured patches of skin on various parts of the body without anaesthesia, had been treated for leprosy, but the ulcers showed only *B. pyocyaneus* and healed under vaccines, while the patches proved to be due to *Microsporon furfur*, which cleared up under sodium hyposulphite.

L. R.

UNNA (P. G.). **Die Behandlung und Heilung der Lepra.** [The Treatment and Cure of Leprosy.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1920. Vol. 60. No. 5. pp. 683–703.

The difficulty of attacking the lepra bacilli is due, firstly, to their protective fatty envelope; secondly, to the fact that they are, in the older nodules at least, embedded in a zoogloea; and, thirdly, owing to the obstructed lymph-flow, medicaments cannot reach them. Hence the need for a preparatory form of treatment to precede the actual attacking of the bacilli in situ.

Extirpation of the nodes being impossible on account of their number, the removal of the surface by means of a razor is recommended to allow the penetration of the desired medicament.

After a preparatory hot bath—the Kutsatsu Lepra-bath of Japan—applied for three minutes at a temperature of 45°–53° C., in addition to which hot irons may be applied over flannel, caustic potash or salicylic acid (as an ointment with pyrogallol and resorcin, or creosote) is applied, or an ointment containing pepsin, hydrochloric acid, carbolic acid and eucarin may be used and possesses the advantage of causing no pain; or a combination of the two methods.

Carbolic acid also has given good results when injected in 1 per cent. solution drop by drop into freshly developing nodules.

For the face the milder resorcin is preferred, but not the strong 40 per cent. resorcin paste (pasta lepismatica) which may so disperse the bacilli as to produce a widespread outbreak of fresh nodules. If the whole body is affected pyrogallol ointment (pyrogallol 5, ichthyol 5, salicylic acid 2, vaseline 86 parts) is recommended, or 10 per cent. pyrogallol and salicylic acid. Hydrochloric acid is also given internally from the beginning of treatment.

The use of injections of the oils of chaulmoogra and camphor is next mentioned and the internal administration of strychnine in pill form.

For the eye manifestations the author uses pyraloxin (pyrogallol oxidized by alkalies) with adrenalin and borax.

Other preparations receive brief mention, namely, mustard, zinc sulphate and carbonate, ichthyol (internally and locally) and "cignolin."

After recommending these many preparations [their very number would seem to imply a doubt as to their efficacy] the author naïvely states that one must ever bear in mind internal treatment with chaulmoogra, since the prognosis is best in those who can tolerate this drug in large doses.

H. Harold Scott.

DUBREUILH (William). **Traitement de la lèpre.**—*Jl. Méd. de Bordeaux.* 1923. Mar. 10. Vol. 95. No. 5. pp. 151–154.

This paper contains a general review of the treatment of leprosy from the historical point of view. It is first pointed out that hitherto few advanced cases of leprosy have been cured, although the infection may die out in some nerve forms, and early cases may recover more frequently than is thought. Treatment by serums, such as that of CASRASQUILLA, and various forms of vaccines, including nastine, leperlin and tuberculin, produced only temporary improvement; metals, such as mercury and arsenic, also failed, unless the very recent results with eparsano are confirmed and found to be lasting, while chaulmoogra oil was only slightly beneficial by oral administration, but much more brilliant results have been obtained by the various methods of injecting soluble preparations of this and other oils, although they are still largely in the experimental stage.

L. R.

BENCHETRIT (A.). **Disertaciones acerca de la lepra. (Primera Serie.)** [Dissertations on Leprosy. (First Series.)]—*Tipografia Vargas Caracas.* 1922. July. pp. 151.

The chief interest of this work lies in the efforts on the part of the author to show that leprosy is distinctly a curable disease and that the conviction of its incurability has reacted disastrously not only on patients but also on medical men. The main reasons given for his belief in its curability are: (1) that cases of spontaneous cure occur, the only treatment being good food, baths, and open air exercise, especially on horseback; (2) that improvement follows removal from an endemic area, and cure results if the rules of hygiene are obeyed, and "appropriate therapeutic agents are employed"; and (3) that at sundry times and in divers places cure has been seen to result from a severe attack of smallpox and repeated attacks of erysipelas.

Of drugs which have been reputed to bring about a cure he mentions more than a hundred (itself evidence that none have proved effectual), but thinks that chaulmoogra is the most satisfactory.

The statements throughout appear to be based on the mere "ipse dixit" of others, and, with the exception of the use of chaulmoogra, no cases are cited. In this instance, however, details of four patients are given, but in none was cure effected, owing, says the author, to the time of treatment being too short.

H. Harold Scott.

PADUA (R. G.). **Observations on Some of the More Recent Work regarding the Chemotherapeutics of Chaulmoogra Oil Derivatives.**—*Monthly Bull. Philippine Health Service.* 1922. Apr. Vol. 2. No. 4. pp. 105–112.

This paper is the report of a visit to see the work on leprosy treatment by WALKER in California and the treatment trials carried out at the

Kalihi Hospital in Honolulu. The well-known work of the American investigators is described, and it is stated that DEAN and WRENSALL found indications in chaulmoogra oil of a hypothetical more highly saturated fatty acid than chaulmoogric acid, designated Taraktogenic acid, but have not isolated it, and that WALKER is still studying the action of ethyl ester chaulmoograte in tubercular disease in animals, and also the bacteriology of leprosy. At the Kalihi Hospital clinical trials are proceeding in both in-patients and those on parole after three successive monthly negative bacteriological reports. These are kept under regular observation for two or three years before final release, opinion still being reserved as to whether complete cures can be obtained, although further advances may result from continued research on the present lines.

L. R.

VAN GAASBEEK (C. B.). **A Report on the Use of Chaulmoogra Oil Derivatives in Leprosy.**—*U.S. Nav. Med. Bull.* 1923. Jan. Vol. 18. No. 1. pp. 50–56.

This is a brief account of the use of ethyl ester chaulmoograte intramuscularly in the leper colony of St. Croix and Virgin Islands. Of 72 patients only 37 accepted the treatment, the rest serving as controls, with the result that every one of the 23 treated cases with lepra bacilli in their nasal discharge became negative in this respect; but so did 15 of 23 untreated cases. The effects on the nodules in 10 cases of from 1–9 years' duration were remarkable, all improving materially, and in 7 the lesions all disappeared, although none of the 12 simi ar control cases improved at all, and 4 became worse. Equally striking effects were obtained in the treated anaesthetic cases, except that not much improvement of ulcers took place, apparently on account of secondary infections. Cases of under 5 years' duration did best, but improvement was quite marked in those of up to 10 years, and 4 of the treated (but none of the untreated) have been paroled. Of the treated cases, 80 have improved, against none of the untreated; the beneficial effects being thus undoubted.

L. R.

HARPER (Philip). **The Treatment of Leprosy by the Intravenous Injection of Chaulmoogra Oil.**—*Jl. Trop. Med. & Hyg.* 1923. Jan. 1. Vol. 26. No. 1. pp. 7–8.

In July, 1921, a report on 37 cases of leprosy treated by intravenous injections of chaulmoogra oil showed that 28 had improved, 6 were stationary, and 3 worse. The effects of two years' treatment are now recorded, including the discharge of 5 cases from the asylum. Five have improved further, 12 are unchanged, and 15 are worse, in considering which it must be borne in mind that 26 were nodular, mostly very advanced and desperate cases. Altogether 265 cases have received from a few weeks to two years' treatment, 40,000 intravenous injections having been given without serious mishap; 11 (5 very aged) have died, 28 are improved, including 15 discharged, 195 are unchanged, and 31 are worse. Other forms of treatment have given even less satisfactory results, tartar emetic intravenously having

proved useless, and, contrary to the experience of others, in a small number of cases treated respectively with moogrol, sodium hydnocarpate or sodium morrhuate no benefit accrued [see this *Bulletin*, Vol. 17, p. 280 ; Vol. 19, p. 395].

L. R.

MATTA (Bernadino) & DEVOTO (Alberto). **La terapia della Lepra con i preparati cuprici.** [The Treatment of Leprosy with Preparations of Copper.]—*Ann. di Med. Nav. e Colon.* 1922. Year 28. Mar.–Apr. Vol. 1. Nos. 3–4. pp. 121–134.

Two preparations of copper were employed in this investigation, namely, cuprocyan, a double cyanide of potassium and copper, and cuproiodase, a liquid compound of copper, iodine, and cholesterin in an oily menstruum.

The former was administered intravenously, beginning with 5 cc. and increasing to 7·5 cc. at the third injection ; these doses were injected at weekly intervals. At the fifth the dose was raised to 10 cc. and the interval increased to 14 days. The course consisted of 30 injections, repeated after a short interval.

Cuproiodase was used either locally or intramuscularly. For the latter the dose was 2 cc. (containing 3 mgm. of copper and 8 cgm. of iodine) injected into the gluteal region every other day. For local use 50 cc. was employed daily on gauze soaked in the preparation which contained 0·15 per cent. of copper and 5 per cent. of iodine. In some cases 1 per cent. methyl salicylate was added, with a view to setting up slight irritation of the tissues. For perforating ulcers of the foot cuproiodase and ether in equal parts was introduced on strips of gauze dipped into the mixture.

The first injection of cuprocyan intravenously in many cases produced some degree of dyspnoea and acceleration of the pulse, but this rarely lasted for more than a minute, and tolerance was rapidly established.

Twenty cases in all were treated, between the ages of 25 and 55 years ; 10 were nodular leprosy, 5 anaesthetic, and 5 mixed. Great improvement was noted both in the local manifestations and in the general condition ; but those treated with cuprocyan showed a return of symptoms about a month after the termination of the course. Those with ulcerative forms, treated locally with cuproiodase, improved very rapidly.

Histological examination of lepromata before, during and after treatment showed that as the cure proceeded the plasma cells, lepra cells and bacilli diminished in number, chromatolysis was more and more marked, the bacilli became more granular and lost their staining characters, and there was a tendency to an increase in the connective tissue whereby " the granuloma lost its characteristic appearance and assumed a more fibrous aspect." These changes were noticed both in cases treated by cuprocyan alone intravenously, and in those who were treated with cuproiodase as well.

The authors claim that the results are quite equal to those obtained with chaulmoogra and that treatment with copper salts is well worth further study.

H. Harold Scott.

VALVERDE (Belmiro). **Nota sobre um novo agente therapeutico contra a lepra.** [A New Drug for the Treatment of Leprosy.]—*Brazil Medico.* 1922. Dec. 2. Year 36. Vol. 2. No. 48. pp. 353–355.

On the analogy of the employment of copper compounds for tuberculous conditions the author prepared with the fatty acids of *Carpotroche braziliensis*, a colloidal copper compound which he uses in a concentration of 1 mgm. per cc., and upon the effects of which he reports very favourably. He has named the preparation " Carpotrochato cuprico." Four cases are detailed, on somewhat similar lines ; one may be given as an example.

A man (age not stated), who had suffered from leprosy for 15 years, came under treatment in 1915. He showed the mixed type of the disease. The face was leonine, with large and numerous lepromata, the body covered with maculae, and some anaesthetic patches were present. Treatment by injections of chaulmoogra oil for a year and a half, starting with 2 gm., with guaiacol and camphor, and increasing gradually to 6 gm., gave good results, and the patient thought he was cured, but in 1919, and again in 1921, fresh symptoms appeared. Chaulmoogra was again tried, but had to be given up as it caused shivering, fever, severe pain in the feet and legs, and intensification of the symptoms. Carpotrochato cuprico was then started. Twelve injections of 2 cc. were given and the dose was then gradually increased till at the time of writing the patient was receiving 5 cc. intravenously each day. The improvement both in local and general symptoms was very definite. [The site of injection of the earlier doses and the intervals between them are not stated in this case, but in another it was at first given intramuscularly and each day.]

The author does not claim that the drug will effect a cure, but that the amelioration is so definite that it is well worthy of further employment and study.

H. Harold Scott.

MAPLES (E. E.). **Some Notes on the Treatment and Diagnosis of Leprosy.**—*Nigeria Ann. Med. & San. Rep. for the Period 1919–1921.* pp. 33–34.

Weekly injections of tartar emetic intravenously have been given at the Calabar Native Hospital with unquestionable beneficial results, although it is certain that it does not cure if administered in doses consistent with safety. In the diagnosis of doubtful cases a nodule or macule may be punctured and stirred with a fairly large bore hypodermic needle, and a little exudate withdrawn in the syringe and stained for effective demonstration of lepra bacilli. Maples states that he commenced tartar emetic treatment in 1919 and claims priority for this method.

L. R.

VERSARI (Attilio). **L'antimonio nella cura della lepra.** [Antimony Treatment of Leprosy.]—*Riforma Medica.* 1923. Jan. 15. Vol. 39. No. 3. pp. 53–55.

Two cases of mixed leprosy, one of five years' duration, the other of seven years, are recorded. Previous treatment with nastin B and chaulmoogra oil had led to but little improvement.

Tartar emetic was injected intravenously. One per cent. solution was employed, the initial dose being 2 cc. Injections were given

every three days, increasing by 1 cc. each time, to a maximum of 10 cc. The first patient received 15 injections, amounting to 90 cgm. in all, the second 22 injections, totalling 1·84 gm.

In each case the local manifestations showed a rapid amelioration, but no diminution in the number of bacteria could be made out on examination of blood smears obtained by puncture of local tubercles.

The author concludes, therefore, that the action of antimony is organotropic and not parasitotropic.

H. Harold Scott.

JANIN (F.). **Traitement de la lèpre.**—*Rev. Méd. et Hyg. Trop.* 1922. Nov.–Dec. Vol. 14. No. 6. pp. 228–230.

Having obtained benefit in leprosy from the subcutaneous injection of serum from blisters raised over leprous lesions, the author tested whether the cantharides used in the irritant applied could be responsible for the results, and now records a trial of intramuscular injection of :—

Cantharidate of soda	0·01 gm.
Sulphate of atropine..	0·02 „
Distilled water	100 cc.

He begins with one-fourth and one-half cc. doses and works up to 1 cc. every other day for five or six doses, with a week's interval between each series of these, any irritation of the genito-urinary tract being controlled by the atropine. The effects were nearly immediate, appearing after two or three injections in improvement in the colour of macules and softening and decrease in the nodules, ulcers healed, pains decreased, and the general health improved "sous l'action du marveilleux tonique qu'est la cantharidine." Nephritis is not a contra-indication to the use of moderate doses, "remineralization" with "sea water" and arsenic being also indicated. No cases are given and the duration of the improvement is not recorded.

L. R.

i. BOULAY (A.) & LEGER (M.). **Recherches sur l'élimination du Calcium dans la Lèpre chez les Noirs.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. pp. 865–868.

ii. —— & ——. **Elimination du calcium et du phosphore chez les lépreux.**—*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 1002–1006.

i. In view of the decalcification of the phalanges, in anaesthetic leprosy more particularly, Boulay and Leger have investigated calcium metabolism in lepers. UNDERHILL, HONEIJ and BORGERT have recently recorded experiments indicating, contrary to what might be expected, a retention of calcium in lepers. In the earlier stages of two cases the authors found calcium retention in accordance with the observations of the American workers, but in one advanced case excessive excretion of this element.

ii. More frequent daily observations of calcium metabolism have confirmed the previous results, and the authors add observations on phosphorus metabolism showing simultaneous increased elimination of that element in the advanced leper, but of an intermittent nature with intervals of retention, and to a considerably less extent than that of the calcium.

L. R.

BOULAY (A.) & LEGER (M.). **La cholestérinémie chez les Lèpreux.**—*Bull. Soc. Path. Exot.* 1923. Jan. 10. Vol. 16. No. 1. pp. 57–59.

The authors have studied the cholesterin content of the blood in lepers, which MARCHAND had previously found to be decreased in three long-standing nodular cases, but normal in one early case. Two early and two advanced cases are reported on and MARCHAND's findings are corroborated. They then investigated the effects of injections of ethyl ester chaulmoograte intramuscularly, and in the first two cases, in an early stage with good nutrition and showing calcium retention, six days after a course of five injections the blood cholesterine had increased from 0·90 gm. and 1·08 gm. to 1·80 and 1·47 respectively, but in one advanced case the cholesterine figures before and after the injections were 1·10 and 1·13 gm., showing no material increase.

L. R.

SERRA (Alberto). **Ricerche biologiche sull' infezione leprosa. Liquido cefala-rachidiano.** [Biological Researches on Leprosy. The Cerebrospinal Fluid.]—*Pathologica.* 1922. July 15. Vol. 14. No. 328. pp. 425–433.

The author quotes first the results of examination of the cerebrospinal fluid in leprous patients reported by JEANSELME, MILIAN, WEIL and TANON, who found no abnormalities in either tubercular, nervous or mixed forms. SLATINEAU obtained a positive Wassermann reaction with the fluid in six out of 21 cases.

Four cases are dealt with in the present paper: (1) a girl of 18, who had suffered from nodular leprosy for 10 years; (2) a woman of 61, with maculo-anaesthetic leprosy of 26 years' standing; (3) a woman of 60, with a similar condition for 13 years; (4) a man of 44, suffering from a mixed type, the disease having started 20 years previously. Attention was specially directed to the following points: the pressure of the fluid, the globulin and albumin content, the cell content, the presence of bacilli, agglutination tests, and the Wassermann reaction. Under the first four of these no noteworthy departure from the normal was met with. The agglutination reactions were too varied or indefinite for the drawing of any useful deductions. As antigens for the complement-fixation tests he used one or more of the following: (1) the filtrate (through a Berkefeld filter) of bacilli grown by the Campana method—on glucose-agar—from spinal puncture fluids, emulsified in distilled water and maintained at 40° C. for eight days; (2) an extract of leproma nodule; (3) extract of syphilitic liver; (4) extract of guinea-pig's heart.

The results of this test were peculiar. In the first case the blood-serum gave positive reactions with all the antigens, but less marked with the fourth, while the cerebrospinal fluid proved negative with all. In the second and third the sera were negative with all four, while the cerebrospinal fluids were positive with both the lepra antigens (Nos. 1 and 2). In the last case the serum yielded definitely positive results with the two lepra antigens, partially positive with the third (syphilitic liver), negative with the extract of guinea-pig's heart; the spinal fluid gave a weak positive with the first two, negative with the third and fourth antigens.

The author claims that his complement-fixation tests and the fact that the spinal fluid gave agglutination up to 1 : 50 in two cases prove the specificity of the bacillus isolated by him, and that the former reaction will serve to distinguish the nervous forms of leprosy from syringomyelia and Morvan's disease.

H. Harold Scott.

Zironi (Amilcare). **Sulla coltura del bacillo di Hansen.** [The Cultivation of Hansen's Bacillus.]—*Boll. d. Istituto Sieroterapico Milanese.* 1920. Dec. No. 6. pp. 381–395. [Received Oct. 16, 1922.]

From leprous nodules ground in a mortar in normal saline an organism was obtained by cultivation in Belfanti's glycerin-broth medium and by the Clegg-Duval method (broth inoculated with cholera vibrio). It proved to be a sporing organism ; many members were acid-fast, others had the typical arrangement of Hansen's bacillus but stained badly. As time progressed they all became less acid-fast, until this property was lost altogether. With Löffler's stain they showed irregular markings ; they were Gram-positive, would not grow aërobically, but only in partial anaërobiosis. Their pathogenicity for rats and guinea-pigs was little or none.

The author reviews the records of previous lepra bacillus cultivators —anaërobes, acid-fast pigmented and non-pigmented organisms, diphtheroids and streptothrices—and then discusses the significance of the one isolated by him. Owing to the failure to reproduce the disease in animals reliance has to be placed to a great extent on the morphology of the bacillus. He lays stress on the following points : (1) that the organism belongs to the mycobacteria ; (2) that in very recent lesions, where the organism is exhibiting intense reproduction, it is not always acid-fast ; (3) that in old foci the bacilli degenerate, lose altogether their acid-fast properties and take on the form described by Unna as Coccothrix ; (4) that they are often clubbed, with barred " diphtheroid " staining, and may show branching.

He next quotes Wherry's findings when growing the *B. tuberculosis* under unfavourable conditions, and states that the variations so resulting find an exact reproduction in the organism above described, and, finally, summarizes the question in these words : " Organisms such as those of Weil, Kedrowski, and Duval represent the parasitic stage of Hansen's bacillus : the diphtheroids and streptothrices are the saprophytic stage in which the organism acquires again its specific characters : that other parasitic forms cultivated may be a degenerative stage analogous to Wherry's cultures of Koch's bacillus or to the granular and streptococcal forms of Mircoli and Much, a stage in the normal development of the same organism."

In a terminal note the author states that, while this paper was in the press, he has isolated in pure culture from lepra nodules two diphtheroid organisms differing in certain characters both from each other and from that described above. All three he intends to deal with in a future communication treating of the pathogenicity of Hansen's bacillus and of the relationship between his organisms on serological lines.

H. Harold Scott.

i. Andriani (S.). **Contributo allo studio delle alterazioni istologiche del fegato e della milza nella lebbra.** [Contribution to the Study of the Histological Changes in the Liver and Spleen in Leprosy.] —*Pathologica.* 1922. Apr. 15. Vol. 14. No. 322. pp. 221–230.

ii. ——. **Contributo alla conoscenza delle alterazioni istologiche del midollo spinale nella lebbra.** [Histological Changes in the Spinal Cord in Leprosy.]—*Giorn. Clin. Med.* 1923. Feb. 28. Vol. 4. No. 3. pp. 81–88.

i. Observations on the liver and spleen of a man of 53, who had contracted leprosy in South America 15 years previously and who died of pneumonia. The liver was enlarged, weighed 1 850 kgm., had a thickened capsule, was firm, granular, and of a reddish-yellow colour on section; the gall-bladder and ducts were normal. The spleen was also enlarged, weighing 830 gm., with a thick capsule, and, on section, showed whitish streaks.

Microscopically, sections of the liver showed large strands of connective tissue, in some places in islets or columns, in others encircling the lobules; in parts entirely replacing the parenchyma; elsewhere a few cells could be seen surviving in the midst of it. Similar connective tissue proliferation was noted in the portal systems surrounding the vessels and bile-ducts. There was increase also of the capsular fibrous tissue. The parenchyma appeared degenerated, the cells being vacuolated and the nuclei in many of them not visible; but where there was no increase of connective tissue they appeared normal. Large cells with two nuclei were seen; these the author regards as compensatory. Staining with Sudan III revealed droplets of fat in many of the cells. Ciaccio's method did not show lipoids. Lepra bacilli were noted in the intercellular spaces, scattered or in small masses, a few in the liver cells generally, but abundant in certain large vacuolated and vesicular-looking cells present in various situations and sometimes in considerable numbers. In sections stained by Gram's method, or with methyl violet, carbol thionin, or toluidine blue (but not with haematoxylin and eosin, or Van Gieson), certain spherical bodies, staining deeply and uniformly, and apparently homogeneous, "in size varying between that of a lymphocyte and a large mononuclear," were met with, singly or in groups. Sections of the spleen showed analogous changes—increase in connective tissue, rarefaction of the parenchymatous elements, homogeneous bodies in the connective tissue (in this case, however, staining with Van Gieson), and the vesicular cells. The reactions with Sudan III and by Ciaccio's method gave results similar to those found in the liver.

The cirrhotic condition of the liver partakes of the dual nature of the hypertrophic and atrophic forms.

After a résumé of the work of previous investigators, the author discusses the "spherical hyaline bodies"—whether they are merely plasma cells or some undifferentiated hyaline substance deposited in them, or whether, again, they are due to retrograde changes in these cells, and concludes that the second of these is the most probable.

ii. Full details of the results of examination of the cord from the same case are given, but the conditions noted, with one exception, were not in any way specific—increase in the meningeal connective tissue, lymphocytic infiltration, and such like—nor were lepra bacilli found, though the changes were most marked in the areas corresponding to those parts of the skin most affected in life. The author again found and describes the homogeneous spherical bodies, and discusses again their possible nature, but without coming to any very definite conclusion.

H. Harold Scott.

Lama (Angel). **Notas sobre la epidemiologia de la lepra.** [On the Epidemiology of Leprosy.]—*Crónica Méd.-Quirurg. de la Habana.* 1922. June. Vol. 47. No. 6. pp. 633–637.

An expression of opinion that the transmitters of the lepra bacillus are, chiefly, *Sarcopsylla penetrans*, and, secondly, the *Sarcoptes scabiei*.

H. Harold Scott.

Kusumbeker (G. C.). **The Chaulmoogra Plant in Leprosy: an Ancient Remedy.** [Correspondence.].—*Lancet.* 1923. Feb. 3. p. 264.

de Lint (J. G.). **Leproserieën.**—*Nederl. Tijdschr. v. Geneesk.* 1921. Jan. 1. 65th Year. 1st Half Vol. No. 1. pp. 53–62. [Historical.]

Uchida (Michitaro). [**Reports on the Experimental Rat Leprosy.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1922. Aug. No. 323. [Summarized in *Japan Med World.* Tokyo. 1922. Dec. 15. Vol. 2. No. 12. p. 354.]

TROPICAL OPHTHALMOLOGY.

STEINER (L.). **La Pigmentation de l'Epithelium Conjonctival et Cornéen.**—*Ann. d'oculistique.* 1923. Feb. Vol. 160. pp. 137–144. With 3 figs in text.

Steiner draws attention to the pigmentary changes in the conjunctival and corneal epithelium of coloured peoples, and comments on the fact that though these phenomena are familiar to workers in the tropics, they have been but little studied. Even the white races may show conjunctival pigmentation, and melanoblasts capable of producing such pigmentation are a constant feature of the histology of the European eye. In the dark races this pigmentation increases as age advances, and is most marked in those parts which are the most exposed to the action of daylight, being densest near the cornea and fading away toward the periphery of the eye; abnormally exposed portions of the conjunctiva (*e. g.*, those in everted lids) take on a deep stain in the tropics. Again, well-defined pigmentary stains on the conjunctiva can sometimes be shown to be identical with pigmented naevi. A third and important variety of pigmentation is found in the ring-like or irregular patches of dark discoloration seen in the subjects of granular ophthalmia. Under treatment, or during the spontaneous cure of the disease, masses of projecting granules are removed together with their contained pigment, whilst the colouring matter that lies in the hollows between the granulations often remains to give rise, as the whole conjunctiva flattens down, to the irregular patterns above referred to. It has been generally assumed that these pigmented markings with which we many of us are familiar are merely the result of the treatment employed. Steiner holds that this is incorrect, and bases his opinion on histological studies. [These observations are of the greatest interest and are doubtless in the main correct; but the reviewer is confident that some of the black masses, in India at least, in the conjunctivae of those who have undergone native treatment for granular ophthalmia, are due to the embedding in the tissues of the remedies employed; many of these are black in colour and are forcibly rubbed into the parts.]

Steiner further points out that the pigmentary changes associated with granular ophthalmia tend to get lighter or to disappear as the condition progresses towards cure. Pigment masses have been found in the tarsal conjunctiva where melanoblasts have not been shown to occur, but Steiner contends that though melanoblasts may be absent from this area in European eyes (on which their histology has in the past been worked out), it does not follow that the same holds true for the eyes of coloured races. Stained spots on the cornea, analogous in all respects to those found in the conjunctiva, have been observed by Steiner on two occasions and by others whom he quotes. The reviewer can bear out this observation, for he has certainly seen such spots on the opacified corneae of old severe cases of trachoma.

R. H. Elliot.

JUDD (Fred. H.). **Several Cases of a Rare Form of Subconjunctival Granuloma.**—*China Med. Jl.* 1922. Sept. Vol. 36. No. 5. pp. 397–399.

Judd gives notes of some further cases of the affection to which MCALL first drew attention [see this *Bulletin*, Vol. 18, p. 81]. These are accompanied by illustrations. He finds "that most cases seem to

follow inflammation. In at least three of his five cases the non-affected eye was blind through inflammation; in three cases the condition followed inflammation, and in one case it followed traumatism." The operative result of one case seems to have been satisfactory.

R. H. E.

COPPINGER (W. V.). **Notes on a Case of Cataract in a Child following Lightning Stroke.**—*Indian Med. Gaz.* 1922. Dec. Vol. 57. No. 12. pp. 462–463. With 1 fig.

The outstanding point of interest in Coppinger's case is that the shape of the partial cataract (caused by the lightning stroke) strongly suggests that the opacity was the result of the direct exposure of the lens to the intense ultra-violet light of the flash, for it follows the curved line of the iris below and the straight line of the lid above.

R. H. E.

BECKER. **[Bilateral Total Cataract and Secondary Glaucoma after a Severe Electric Shock.]** *Heidelberg Ophthalm. Gesellsch.* 1920. Aug.

Becker's case of double cataract, following the shock of a 60,000-volt discharge, is of interest in connexion with the above record. Opacities appeared shortly after the injury and the cataracts were total in three and a half months. The rapid swelling of the lenses caused a secondary glaucoma similar to that so often seen in the intumescent cataracts of Eastern lands. Iridectomy relieved the tension and successful extractions were performed later.

R. H. E.

WRIGHT (R. E.). **The Importance of Radiography in Doubtful Cases of Optic Atrophy with Special Reference to Pituitary Disease.**—*Brit. Jl. Ophthalm.* 1923. Vol. 7. No. 3. pp. 123–138. With 5 figs & 6 charts.

Wright points out that unsuspected pituitary disease may often be the cause of optic atrophy which cannot be readily accounted for otherwise, and he emphasizes the importance of radiography in such cases. Clinical notes are given of five cases of the condition. The excellent photographs are by BARNARD. [The frequency of optic atrophy of obscure origin amongst tropical patients makes Wright's observations of great interest. The more we can cut up this large, little understood, group into well-diagnosed components, the better for all concerned.]

R. H. E.

BARTOLOTTA (E.). **Le cause della cecità in Libia.** [The Causes of Blindness in Libya.]—*Arch. Ital. Sci. Med. Colon.* Tripoli. 1920. June. Vol. 1. No. 6. pp. 265-267. With 3 text figs.

Visitors to Tripoli are astonished at the enormous numbers of blind and half-blind persons met with. Professor Bartolotta states that there are three main causes of this: first, small-pox; secondly, conjunctivitis associated with the Koch-Weekes bacillus; thirdly, quackery. The last is the most potent factor. Mild catarrhal conjunctivitis is treated by blistering in the region of the eye, and if the

condition does not rapidly clear up the charlatans to whom the patients go do not hesitate to apply irritants within the lids and even actual cautery (" punte di fuoco ") not only to the palpebral but also to the ocular conjunctiva and to the cornea itself. Subsequent neglect does the rest.

H. Harold Scott.

DE RUYTER (J.). **Een nieuwe soort van exophthalmus.** *Geneesk. Tijdschr. v. Nederl.—Indië.* 1921. Vol. 61. No. 5. pp. 517-518.

The case is recorded of a man, 43 years of age, exhibiting marked exophthalmos with chemosis and oedema of the lower lid of each eye. The condition had persisted for four months, and the patient stated that he had had a similar attack seven months previously which had cleared up spontaneously. All the usual causes were excluded, and poisoning by paraphenylendiamine, which is sometimes used in hair-dyes and also for dyeing clothes and leather and causes these symptoms, could not be traced. Three similar cases occurred in Soerabai and Malang.

H. Harold Scott.

Vitrex Glass.

The announcement of a new form of glass (Vitrex) which, whilst cutting off the deleterious ultra-violet rays, hardly interferes at all with those which are strictly luminous, appears to mark an important advance in our search for an ideal glass for wear in the tropics. Professor CROOKES' discovery of the glass called after his name proved a great boon to sufferers from glare asthenopia, but even CROOKES' " A " glass has the disadvantage of possessing a slight mauve tint, which is objectionable from two points of view: (1) some patients complain of the shutting off of a certain amount of luminous rays thereby; and (2) some object to the notice which they assert that even the pale tint of the glass attracts. Vitrex is free from these objections, for it is a clear white glass; its claims to shut off ultra-violet rays are certified by such undoubted authorities as Sir Oliver LODGE, Dr. Judd LEWIS and Dr. Edridge GREEN; so that from the theoretical point of view they are very strongly supported. As the glass can be obtained of all spectacle makers, clinical tests of its value will not be long wanting, and excellent results may confidently be prophesied from its use in the glare of the tropics, of snow, or of any form of ultra-violet light, not forgetting that encountered in the taking of " movie " pictures. It is probable that before long neutral tinted glass of different depths of shade will be supplied by the Vitrex Company, so that we may hope to have clear Vitrex and various shades of neutral tinted Vitrex for our patients to choose from. This will be a great matter for tropical ophthalmologists.

R. H. E.

LOW (G. C.) & NEWHAM (H. B. G.). **Case of Trypanosomiasis from Portuguese East Africa Apparently Cured.**—*Brit. Med. Jl.* 1922. Jan. 21. pp. 96–97.

The case was one of infection by *T. rhodesiense* and was of about three years' duration. " He complained one day of the sight in one eye; he was examined by Col. R. H. Elliot, who reported that there was a patch of paracentral choroido-retinitis in the right eye, the condition,

so far as we know, only twice before reported in human trypanosomiasis." The previous records are by COLLINS in a case of MANSON'S (1902), and by MORAX in 1910. It is of course well known that other eye symptoms are not uncommon in this disease, especially in the Rhodesian cases.* R. H. E.

CHARLES (E.). **Removal of Filaria from under the Conjunctiva.**—*Indian Med. Gaz.* 1920. Oct. Vol. 55. p. 378.

Charles removed what was presumably a filaria from a swelling on the inner lower aspects of the globe in a Hindu male, aged 45. The specimen was unfortunately spoilt by the method employed for preservation. It was stated to be a filaria, apparently a female, 33 mm. long by 2 mm. in diameter.

[The reviewer would take the opportunity of impressing on tropical surgeons the importance of the identification of all such zoological specimens. They should be placed at once in alcohol (70 to 85 per cent.) to which 5 to 10 per cent. glycerine has been added. The laboratories of the London School of Tropical Medicine (Endsleigh Gardens, London, N.W.1) will gladly examine such material and report upon it. A great deal of valuable material has been wasted for the want of proper handling, and the progress of knowledge has been considerably retarded thereby.] R. H. E.

PARODI (S. E.) & BONAVIA (L. L.). [**Filaria in the Eye.**]—*Semana Med.* 1920. Vol. xxvii, p. 543.

These observers removed a filaria from the right eye of a female, aged 62. The parasite was seen coiling and uncoiling itself beneath the conjunctiva. It had been causing irritation for four days. After removal it was found to be 11 mm. in length, and it kept up its movements for three days, at the end of which time it was placed in alcohol. The examination of the blood for microfilariae yielded no results. The authors thought the parasite to belong to a species which had not previously been described. R. H. E.

BEGLE (Howell L.). **Infestation with *Filaria loa*. Report of a Case of Filaria beneath the Conjunctiva and Microfilariae in the Peripheral Blood Stream.**—*Jl. Amer. Med. Assoc.* 1921. May 7. Vol. 76. No. 19. pp. 1301–1305.

Begle states that there are nine or ten patients in the U.S.A. who harbour the *Loa loa*. Most of them seem to be missionaries returned from the West Coast of Africa. The symptoms, etc., of the condition and a number of other points are discussed. R. H. E.

FISCHER (W.). **Zur Kenntnis der Parasiten der Conjunctiva.** [Conjunctival Parasites.] *Cent. f. Allg. Path. u. Path. Anat.* 1919. Vol. 30. p. 226.

In an article on conjunctival parasites, Fischer refers to the organisms found in the conjunctival sac of man and the dog in China. The parasites are the same in both cases, except that those which infest

* *e.g.*, interstitial keratitis. A case in which this symptom was observed was noticed in this *Bulletin*, Vol. 20, p. 317, where it was overlooked that similar cases had been already reported [*loc. cit.*, Vol. 1, pp. 279 and 656].

man are the larger. He states that those removed from human eyes are probably identical with *Filaria lachrymalis* (Gurlt) and with *Filaria palpebralis* (Wilson) ; but he adds that accurate classification is quite impossible in the present state of our knowledge of the subject.

R. H. E.

MOTAIS. [**Ocular Sparganosis.**]—*Ann. d'oculistique.* 1921. Vol. 158. p. 329.

Motais reports cases of sparganosis of the eyelids and orbit in a male, aged 25; both lower lids were oedematous and contained small tumour masses. Both orbits were also affected. The eyes had been red and the eyelids oedematous for years. By means of a Kroenlein resection he removed some of the parasites from the neighbourhood of the orbital wall, and then injected a solution of cyanide of mercury into the orbits on several occasions ; neosalvarsan was also used.

In a child of 11 a diagnosis was arrived at from the presence of oedema accompanied by a tumour in one lower lid. An incision into the mass released a specimen of the parasite. The forms obtained in this way are larval and vary from 10 to 35 mm. in length, the head measures 2·5 mm. in breadth by 3 mm. in length, and the body is less than 2 mm. in breadth. The parasites obtained from the lid tumours are thus very much smaller than those originally described by MANSON ; the latter were found beneath the peritoneum. The parent form is believed to be *Dibothriocephalus mansoni*, which occurs in the pig and dog in Japan, Africa, British Guiana, Tonkin, and Annam.

R. H. E.

CALDERÓN (Victor Manuel). **Contribucion al Estudio del Filárido onchocerca sp. Dr. Robles, 1915, y de las enfermedades que produce.** [*Filaria onchocerca.*] [Doctorate Thesis, 1919.]—107 pp. With 1 map & 35 other figs. 1920. June. Guatemala : Tipografia Sanchez & de Guise.

Calderón contributes a long paper on the subject of the disease onchocerciasis originally described by PACHECO-LUNA.

R. H. E.

PACHECO-LUNA (R.). **Onchocercosis.**—*Amer. Jl. Ophthalm.* 1921. Vol. 4. p. 175.

Pacheco-Luna returns to the subject of onchocerciasis, which he states to be endemic in a strip of land along the Pacific coast of Guatemala at an altitude of from 2,000 to 4,000 ft. ; it is also believed to occur in the neighbouring regions of Mexico and San Salvador. He describes the ocular and other manifestations of the disease. He thinks the intermediary host is some blood-sucking insect, possibly a Glossina.* He advises that dwelling houses should be built in open places as far as possible from the banks of streams, and that they should be furnished with a good and safe water supply ; the banks of streams in the neighbourhood of cultivated land should be cleared ; lastly, he repeats his advice as to the removal by operation of the tumours containing the filariae. With regard to the nature of the parasite Pacheco-Luna believes that it belongs to a species hitherto undescribed.

R. H . E.

* This genus has not been found in the New World except in fossil form.

Behr (Carl). **Ueber Ophthalmomyiasis interna und externa. (Die Fliegenlarvenerkrankung der Auges.)**—*Klin. Monatsbl. f. Augenheilk.* 1920. Vol. 64. pp. 161–180. With 3 text figs.

A boy of seven developed a circumscribed phlyctenule of the conjunctiva with swelling locally. Later, a scleral nodule developed followed by severe inflammation of the eye. The eye was removed on the suspicion of glioma or tuberculosis and the larva of a fly—believed to be *Hypoderma bovis*—was found. The retina was detached and there was intense choroiditis. The invasion of the human eye by this parasite is rare, and occurs in summer or early autumn, children alone being affected, the tougher sclera of adults resisting the passage of the worm. If the maggot enters the anterior chamber it can be easily diagnosed and extracted, whilst if it gets in further back the harm done is irreparable ; the last moment at which the eye can be saved is that in which the circumscribed phlyctenule it causes is replaced by the development of a scleral nodule ; the larva may then be extracted by the aid of an incision before it has had time to pass into the interior.

R. H. E

Fülleborn (F.). **Nachtrag zu meiner Arbeit über Ophthalmomyiasis.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1920. Vol. 24. pp. 97 100. With 2 figs.

Fülleborn discusses the infection of the sheep's nostrils by the Oestridae, which he says takes place without the fly settling on their victims. In the Cape Verde group the Oestrus larvae are found in the eyes, pharynx and nose of the native as well as in the nostrils of sheep and goats. It is said that the natives of Sal endeavour to protect themselves against these pests by smoking and chewing strong tobacco. The larvae are extracted from the human eye by operation, whilst those in the pharynx are said to be treated with hot oil and highly spiced foods.

R. H. E.

Prates (Manuel Maximo). **La myiase oculaire de l'île de Sal (Archipel du Cap Vert).**—*Bull. Soc. Path. Exot.* 1919. Dec. 10. Vol. 12. pp. 736–740. With 1 fig.

Prates traces the cases of human ophthalmomyiasis in the Cape Verde Islands to *Rhinoestrus nasalis*, an equine parasite, or to *Oestrus nasalis*, which is parasitic on goats and sheep. The former fly while in flight can deposit anything up to 50 eggs on the eye of a horse, mule, or donkey, and may accidentally do the same thing in a human eye. The latter fly deposits its larvae in the eyes of its victims, and only accidentally invades those of men and dogs.

R. H. E.

Ticho (A.). **Ophthalmomyiasis.**—*Brit. Jl. Ophthalm.* 1923. Apr. Vol. 7. No. 4. pp. 177–182.

In all six of Ticho's cases the larvae lay in the conjunctival sac and outside the tissues of the eye. He furnishes strong confirmatory evidence in support of the view that the mother fly deposits her larvae in the eye by flying against it. In three out of the six the flies would

appear to have belonged to the Oestridae. The general question of maggot infection is discussed, and stress is laid on the fact that, whilst the anterior chamber tolerates the larvae well, an invasion of the posterior segment of the eye is fatal to the retention of sight.

R. H. E.

Bull (Lionel B.). **Habronemic Conjunctivitis in Man producing a "Bung Eye."**—*Med. Jl. Australia.* 1922. Oct. 28. 9th Year. Vol. 2. No. 18. pp. 499–500.

"Bung eye" is well known in Australia, and is also familiar to workers in the tropics, who have hitherto attributed it to the inflammatory oedema produced in the loose tissue of the lids, by the stings of poisonous insects. Bull suggests that some of the cases may be due to the invasion of the tissues by a larval nematode, belonging to one or other of three species of the genus *Habronema*, which in the adult stage are parasites in the stomach of the horse. The embryoes of these worms, still enclosed in the egg shell, pass out along with the faeces, and are liable to be taken up by fly larvae feeding thereon. The nematode larva undergoes changes within the fly and is deposited by the proboscis of that animal on the exposed mucous membranes of the horse, where it produces a granulomatous condition of a characteristic nature. After a time the spaces (or worm canals) occupied by the larvae and the larvae themselves disappear, the granuloma alone being left. In the case recorded by Bull a characteristic granuloma was found under the upper lid of a child, who, five weeks previously, had suffered from "bung eye"; and he suggests that the invasion of the human conjunctiva by the larval Habronema may be responsible for some of the cases of "bung eye," which are so commonly met with in Australia. The suggestion is valuable and promising, and may prove to apply to tropical as well as to Australian practice.

R. H. E.

Suemori. [**Ocular Tumour due to Lung Distoma.**]—*Nippon Gank. Zasshi.* 1920. Feb.

Suemori has investigated the tumours in the lids and orbits of animals infected by the lung distoma. He found that when specimens of distoma were placed in the conjunctival sac, they reached the uveal tract, lids, and orbits by direct entry through the vessels which perforate the eye from the conjunctiva. Having reached their destination they set up their characteristic lesions.

R. H. E.

Mazza (A.) & Tiscornia (S.). [**Subconjunctival Cysticercus.**]—*La Prenza Med. Argent.* 1920. Sept. 10.

These writers report the removal of a cysticercus from the subconjunctival tissues of the lower fornix in a girl of 15. They state that cases of cysticercus are becoming increasingly frequent in the Argentine, and it is therefore necessary for surgeons to be on the look out for them. It is of interest to record that both Uhthoff and Pillat reported an increased number of cases of cysticercus during the war, as a result of faulty meat inspection.

R. H. E.

EGYPT. Ministry of the Interior, Department of Public Health. **Eighth Annual Report of the Ophthalmic Section, 1920, by the Director of Ophthalmic Hospitals.** [MACCALLAN (A. F.).] 39 pp. With 5 charts & 5 plates. 1921. Cairo: Government Press. [Price P.T. 20.]

The annual report for 1920 of the Ophthalmic Section of the Egyptian Public Health Department (by Dr. A. F. MacCallan) must necessarily be of special interest, since it deals with a very large number of eye cases. Over 108,000 patients were examined during the period under review.

In Egypt, where nearly 75 per cent. of all cases of blindness are stated to be due to inflammatory conditions of the conjunctiva, and where between 90 and 95 per cent. of the population are said to show evidence of trachoma, conjunctival affections naturally attract most attention. Trachoma is said to be a much less dangerous disease than the more acute infections. The use of a lotion of eusol solution, combined with the application of 2 per cent. nitrate of silver, forms the routine treatment for acute conjunctival inflammations. From 8 a.m. to 3 p.m. the eyes are continuously bathed with the lotion by the patient, whilst, in addition, a hospital attendant swabs the patient's eyes at intervals of half an hour. No mention is made of the use of eyebaths of a saturated solution of magnesium sulphate in the treatment of these conditions. The eusol solution is freshly made of active eupad powder and ordinary water (2½ per cent.). The solution is shaken up in a demijohn from time to time for 24 hours and is then filtered through cotton wool.

It is interesting to note that, although gonococcal infections of the conjunctiva are so common in Egypt, ophthalmia neonatorum is stated to be rare.

Corneal ulceration occurred in 27 per cent. of cases of gonococcal infection, in 15 per cent. of Koch-Weeks infection, and in 22 per cent. of Morax-Axenfeld infection. Pneumococcal infection caused the highest percentage of ulceration, viz., 33·5. The report contains charts which show a remarkable correspondence between the rise of atmospheric temperature in the spring and summer and the number of cases requiring treatment for gonorrhoeal and Koch-Weeks ophthalmias.

Only 518 cases of trachoma were treated by Heisrath's combined excision as compared with 8,952 treated by scraping and expression.

More than 2,000 cases of glaucoma were met with, and 735 of these were operated upon. Sclero-corneal trephining was the operation of election. One case of late infection was met with. This occurred in an eye which had been trephined 16 months previously; the hypopyon quickly disappeared under treatment by Dr. BARSOUM, and the patient regained useful vision. The fact that only one case of late infection was met with in Egypt, where such a large number of patients have been trephined for glaucoma and where septic conditions of the conjunctiva are so frequent, is strong evidence that this complication is not necessarily so common as it has been stated to be by some surgeons, always provided that the operation is performed skilfully and in accordance with the rules laid down by the author of the procedure.

Optic atrophy is stated to be common in Egypt. The type is mostly post-neuritic.

The work of the Laboratory of Ophthalmic Pathology was extended during the year, and 397 examinations, exclusive of bacteriological examinations, were made. An interesting case of palpebral sporotrichosis is reported by the pathologist, Dr. SOBHY Bey.

Much useful work is being done by the ophthalmic clinics which have been established at the government primary schools.

The Director and his staff may well be congratulated on the good work shown in the report.

R. H. E.

Egypt. Ministry of the Interior, Department of Public Health. **Ninth Annual Report of the Ophthalmic Section, 1921, by the Director of Ophthalmic Hospitals.** [MacCallan (A. F.).]—29 pp. With 5 charts: 1922. Cairo: Government Press. [Price P.T. 15.]

The ninth annual report of the Ophthalmic Section of the Egyptian Department of Public Health follows much the same lines as that of the previous year.

One hundred and thirteen thousand patients were treated during the year, and 65,000 operations were performed. The work of the hospitals is thus seen to be increasing steadily.

The dangerous character of the acute inflammations of the conjunctiva met with in Egypt is shown by the fact that, out of 14,540 cases of acute ophthalmia treated during the year, 25 per cent. came to hospital with ulceration of the cornea already developed. The organisms responsible, in order of their frequency, were the pneumococcus, the gonococcus, Morax-Axenfeld bacillus, and the Koch-Weeks bacillus.

The frequent occurrence of optic atrophy in Egypt has been already noted, and investigations as to the nature of the affection were undertaken during the year. It was found that post-neuritic atrophy was the commonest condition, and next to this, an atrophy following on a retrobulbar neuritis. These findings correspond with those of Kirkpatrick's work in the Madras Ophthalmic Hospital.

Out of a total of 127,223 patients who presented themselves for treatment during the year 2,254 showed signs of glaucoma. About 75 per cent. of these had postponed coming to hospital until they were already blind in one or both eyes. Elliot's trephining, with a $1\frac{1}{2}$ mm. Bronner's trephine, was the operation of election in uncomplicated chronic glaucoma. It is stated that trephining is not advisable in cases in which there is an opacity of the lens, on account of difficulty when the time comes to do an extraction. [This complication does not, however, constitute a contra-indication to trephining in chronic glaucoma; it is quite easy to make a corneal section when performing the cataract extraction, and the filtration area can in this way be avoided.]

It may be noted that it is the custom to perform prophylactic trephining; so that, when unmistakable glaucoma is present in one eye, operation is advised for the other eye, even though there are no clinical signs of glaucoma in it. This is a good rule in tropical practice, in which many of the patients can never hope to return to seek an expert's advice.

R. H. E.

Ophthalmological Society of Egypt.—*Bulletin of 1921.* 1921. Cairo.

The Bulletin of the Society contains a record of the communications made to the annual general meeting and of the discussions which took place upon them. The papers published furnish ample evidence that the society is very much alive and that ophthalmology in Egypt continues to be progressive.

The most important paper is a report on the prophylaxis of trachoma and ophthalmia by a sub-committee of the society which was appointed at the annual general meeting in the previous year. Improvements in general and in personal hygiene, the teaching of elementary principles of hygiene in the schools, and a universal elementary education for boys and girls, are the measures of prophylaxis which appear most hopeful. Special stress is laid upon the importance of educating girls—the future mothers—regarding the mode of infection of trachoma and ophthalmia and the methods of preventing it. The committee also recommend propaganda by pamphlets, by preachers in mosques and churches, and

by instructions read at public meetings. The fact that, in Egypt, 155,511 persons out of a population of 12,718,255 are blind in both eyes is eloquent testimony to the urgency of the problem. Acute ophthalmias appear to be a more important cause of complete blindness than trachoma is. Some stress is laid upon the rôle played by flies in the spread of infection.

Dr. Sobhi Bey contributes a paper upon the overlapping of the cornea by the sclera and emphasizes the importance of ascertaining the extent to which this is present before undertaking an intraocular operation—especially in the case of Elliot's sclero-corneal trephining.

Dr. Cassimatis writes regarding the therapeutic value of milk injections in cases of eye disease. His report is favourable; but he does not consider the treatment to be a panacea for every form of eye disease.

R. H. E.

Hudellet (G.). **Notes d'Ophthalmologie.**—*Bull. Soc. Méd.-Chirurg. française de l'Ouest-Africain.* 1920. Mar. & June. Vol. 2. Nos. 3 & 6. pp. 66–69; 173–176.

Hudellet prefaces his paper by drawing attention to the peculiarities of the heavy pigmentation of the Senegalese eye as compared with that of the European organ. In the case of the African native, it is especially necessary to employ oblique, or focal, illumination in order to detect abnormal conditions of the iris. Ophthalmoscopic examination, too, is rendered somewhat more difficult by the diminution of the red reflex, which is caused by the great quantity of pigment in the choroid. The macula differs much in appearance from that of the European; the pigmentation is in some cases so dense as to lead to its being mistaken for a pathological condition. An excessive overlapping of the cornea by the sclerotic was frequently observed; the author suggests that this is often the cause of an irregular astigmatism.

The natives of French West Africa were not found to possess that extreme acuity of vision which savage races are often stated to enjoy; this was accounted for in many cases by the presence of old corneal lesions. Their sense of colour vision, too, was more feeble than that found in more civilized races.

Trachoma and diseases of the optic nerve were the complaints most frequently met with. Cataract does not appear to be anything like so common as it is in India, and no mention of glaucoma is made in the paper. Optic neuritis and optic atrophy secondary to neuritis were the most common forms of nerve disease. The etiology of these conditions presented some difficulties; a positive Wassermann reaction was obtained in only 60 per cent. of the cases.

R. H. E.

Bargy (Maurice). **Statistique des cinq premières années de l'Institut ophthalmologique de Hanoi.**—*Bull. Soc. Méd.-Chirurg. Indo-chine.* 1921. July. Vol. 12. No. 1. pp. 90–99.

This paper contains the statistics of the diseases treated and of the operations performed, since the opening of the hospital in April 1916. The need for such an institution and the good quality of the work done are readily appreciated on reading the paper. The hospital is intended for a centre of ophthalmic teaching in Indo-China.

The most striking feature of the years 1917–20 is the very high proportion of trachoma to other diseases treated. During this period 16,625 operations were performed, and, of these, no fewer than 13,576 were for trachoma and its complications, 5,922 being for entropion. It is noticeable that, in spite of the prevalence of trachoma, only 7 cases of acute dacryocystitis were admitted during this period.

509 cases of senile cataract were admitted and 145 cases of glaucoma. Combined extraction was performed in the vast majority of cases of cataract.

R. H. E.

BARGY (M.). **Les injections parentérales de lait en thérapeutique oculaire.**—*Bull. Soc. Méd.-Chirurg. Indochine.* 1921. July. Vol. 12. No. 1. pp. 100–129.

Bargy reviews the different opinions expressed as to the efficacy of milk injections in ocular diseases since this form of treatment came into use in 1915. The consensus of opinion quoted is in favour of injections for the treatment of such diseases as affect the anterior segment of the eye, especially in infections of the conjunctiva and in gonorrheal iritis.

Bargy has used the treatment very extensively, but is unable, as yet, to form an opinion as to its true value in cases of disease of the posterior segment of the eye. He has, however, found it most efficient in those affections of the eye which are attended with conjunctival oedema and infiltration. Beyond the beneficial effect that it exerts upon the secondary infections, it has no value in the treatment of trachoma. It has been of great use in the treatment of gonorrhoeal ophthalmia and of corneal ulcer with hypopyon. The injections markedly relieve pain and photophobia, and diminish the amount of secretion.

The dose usually employed is one of 5 cc., but a smaller quantity is injected in the case of an invalid, a child, or an old person. It is essential to procure a febrile reaction, and, if the first dose fails in this respect, it is increased on subsequent occasions. An interval of two days is generally left between each injection. The milk is prepared by boiling it for ten minutes, and is again boiled for some minutes before the injection is made. It is best to make the injections intramuscular, as an extensive and painful local reaction is excited by a subcutaneous injection. The pain lasts for about twenty-four hours. The general reaction, with headache, fever and malaise, comes on from two to six hours after the injection. Care should be taken to avoid injection into a vein, since embolism might be caused in this way.

R. H. E.

TALBOT. **L'Institut Ophthalmologique Albert-Sarraut, à Hué, en 1921.**

This institution was founded in 1920 with the view of combating trachoma in Annam. The paper deals with the staff of the hospital, its administration, its expenses, and its statistics.

Trachoma furnishes 36 per cent. of the out-patients, 50 per cent. of the in-patients and 68 per cent. of the operations. It is in the schools that this disease can best be combated by (1) the inspection of the scholars; (2) the grouping of the infected, and (3) the application of suitable treatment. The co-operation of the scholars, and especially of the monitors, is cultivated. Trachoma ranks very easily first in Annam as a cause of blindness.

Gonococcal Conjunctivtis. As in other tropical contries, this form of conjunctivitis dose not follow European rules; it is often impossible to trace the venereal focus of infection; on the contrary, in July, August, and September the disease occurs with epidemic force year after year, resembling in this the other forms of acute conjunctivitis.

Ocular Sparganosis. Interesting cases of this only recently described malady are quoted. The larval parasite may be met with either under the bulbar conjunctiva or in the orbit, and may be found still alive, or dead and degenerate; an exact diagnosis is difficult until the mass is actually cut into; in the orbital cases the removal of the worm is followed by the happiest results; it is in these orbital cases that a differential diagnosis between sparganosis and sarcoma is so very important.

R. H. E.

Fernando (Antonio S.). **Causes of Blindness among Filipinos as observed in the Philippine General Hospital Dispensary—a Preliminary Report.**—*Arch. of Ophthalm.* 1922. July. Vol. 51. No. 4. pp. 374–378.

This report, with its statistical tables based upon 700 cases of blindness examined during the years 1920 and 1921, is of interest to all who are concerned with tropical ophthalmology and should be read in the original. It does not lend itself to abstraction.

R. H. E.

Fernando (Antonio S.). **A Brief Clinical Survey of Cases in the Free Dispensary of the Philippine General Hospital.**—*Arch. of Ophthalm.* 1923. March. Vol. 52. pp. 170.

The principal interest of Fernando's paper is that under difficult conditions in a tropical country he is endeavouring (1) to make a scientific classification of his ophthalmic material and (2) to organize and carry out team work. The figures speak for themselves and must be studied in the original; they are highly suggestive of those commonly met with in the East. Two small matters demand notice: (1) There is universal belief among the patients of the islands that glaucoma is caused by taking a bath after having stayed up late on the previous night or by sleeping with the hair wet. It is not impossible that with a people whose males wear their hair long the chill so engendered may be one of the exciting causes of attacks of glaucoma. (2) There is a custom of scratching the cornea over an embedded foreign body "with the tender end of the stalk of a certain kind of grass." Severe infection and extensive ulceration follow this crude procedure. The reviewer has had occasion from time to time to comment on the low standards with which tropical ophthalmologists sometimes confess themselves as satisfied, and he trusts that the high ideals and the scientific methods of working adopted by Dr. Fernando will be widely noted and followed.

R. H. E.

China Medical Journal. 1922. July. Vol. 36. No. 4. pp. 364–369.—**Department of Ophthalmology. Abstract of Operative Clinic, held by Professor H. J. Howard and Dr. T. M. Li at the Ophthalmological Section, September 16th, 17th and 18th.**

In cataract extraction the use is advocated of a sclero-conjunctival suture, which is looped away from the field of operation, but pulled tight and tied as soon as the extraction is completed. It is especially recommended for troublesome patients.

A case of quinine amblyopia in a child aged 1 was met with after large doses of euquinine. Details are given, and the statement is made that "in severe cases of malaria, sometimes a dose of quinine sufficient to cause amblyopia is not sufficient to kill the parasite."

A complete tenotomy of the right inferior oblique for paresis of the left superior rectus met with great success. A complete tenotomy of the right inferior oblique for paralysis of the left superior rectus and spasm of the right inferior oblique was equally successful. These cases are of very decided interest, and are the more remarkable in that the bold and successful surgery recorded emanates from the tropics, where comparatively little opportunity for such work presents itself.

R. H. E.

MISCELLANEOUS.

NIGERIA. **Annual Report on the Medical Research Institute for the Years** (i) **1920 and** (ii) **1921.** [CONNAL (A.), Director.]—27 pp. and 14 pp. 1922. Lagos: Govt. Printer.

i. During 1920, the stools of 317 persons, including 195 Europeans, were examined, usually one specimen only. They were plated out on McConkey medium and the non-lactose fermenters further studied. On one occasion only was a typical Flexner bacillus isolated, and this patient had been during the war in a country where bacillary dysentery was prevalent. It is noted that a large number of the stools were received and plated within an hour. The European cases were arranged in four groups: in the first, of 25 in which the motions were liquid and contained mucus, 20 contained active *E. histolytica*, and in the third, solid motions with strings of mucus, 7 of 11; in the other groups, without mucus, this amoeba was much less common. In fact in 31 cases of acute dysentery *E. histolytica* was found in all but one. The writer contrasts the experience of BUTLER in Sierra Leone [see Sanitation Supplement, 1921, p. 141], who isolated a Flexner strain in 14 instances and Shiga in one, and *pace* BUTLER seems to attribute these findings to the fact that Sierra Leone supplied most of the carriers for the West African Forces in East Africa.

In the Annual Report for 1918 [see this *Bulletin*, Vol. 17, p. 219] an account was given of cases of amoebic dysentery treated with alcresta and emetine. Of nine in which there was apparent cure and the after history is known, eight have had no relapse.

Eleven patients treated for leprosy by gynocardate, as detailed in the Reports for 1918 and 1919, have shown no active sign since. Four active cases were treated with potassium cuprocyanide [see this *Bulletin*, Vol. 13, p. 5] for three months without improvement.

A number of house-flies were dissected and in a few instances found to contain cysts of *E. histolytica*. Other protozoa harboured were Herpetomonas, Cercomonas, Trichomonas and Eimeria. Of the last, found in a single fly, taken at a refuse heap, some description is given; it corresponds with none of the described species, *c.f.* Eimeria.

A table shows the nature of receptacles in which identified mosquito larvae were found during each of nine months; there are few receptacles against which *S. fasciata* does not figure, but the one preferred far above others is the waterpot, containing water from the nearest standpipe.

A case of actinomycosis of the omentum in a native is described.

Attempts were made to carry out the Wassermann test at the central laboratory. The blood or serum rarely arrived in a suitable condition, and it is inferred that, if a campaign against syphilis is to be waged, the test must be done at different stations in Nigeria or by travelling pathologists.

Some pages of this report are occupied by an account of 30 cases of blackwater fever, which will be noticed under that heading.

ii. In the Report for 1921 a synopsis is given of the development of *Loa loa* in Chrysops [see this *Bulletin*, Vol. 19, p. 654], and notes are added on the habits and life-history, which could not be traced beyond the larval stage, of the four species of Chrysops met with in Nigeria. In places 16 per cent. of natives are infected. Preventive measures consist in drainage to reduce the number of breeding-places and tree felling to remove shade, or alternatively the avoidance of infested areas in the selection of stations.

Four hundred and fifty-two samples of faeces were examined, 328 from Europeans, 124 from natives. In Europeans *E. histolytica* was present in the active or precystic stage in 51, as cysts in 16, 67 in all; 248 were negative. In natives *E. histolytica* was noted 24 and 16 times; 47 were negative. Helminth ova were more prevalent among the natives than the whites. Dysentery bacilli were specially sought but were never found, and in two suspicious cases the blood serum failed to agglutinate the stock laboratory culture.

Four lepers were treated with Moogrol. A weekly dose of 5 cc. was gradually reached. Their improvement, which was rapid, has so far been maintained.

Information is given about 26 cases of blackwater fever.

Dr. Connal speaks of the need for a physiologist to examine native poisons and drugs, and study the metabolic changes which occur in the local diseases.

A. G. B.

East Africa Protectorate. **Annual Report of the Bacteriological Laboratory for the Year 1919.** [Kauntze (W. H.), Senior Bacteriologist.]—45 pp. With 1 plan and 2 charts. London: Waterlow & Sons, Printers.

The year's efforts were directed to the production of an efficient calf-lymph, a study of the Nairobi water-supply in consequence of a small epidemic of enteric, and the examination of soda-water prepared in the town.

The failure of the existing calf-lymph was due to its preparation in all stages in the open air, subjected to sun and dust, to absence of ice, collection from the calves at the wrong period and other errors of management. These matters were in course of remedy when instructions arrived from London advocating a Central Lymph Institute for Kenya and Uganda situated in Uganda. The author questions whether such lymph would be equally effective in the hot climate of Uganda and the cold of the Highlands of British East Africa, and notes that Dar-es-Salaam lymph is effective at Kampala but not at Nairobi. He states also that vaccination is sometimes effective in well-pocked persons and that second attacks of smallpox are not infrequent in East Africa, suggesting the existence of more than one strain of smallpox, which one strain of calf-lymph would fail to meet.

As regards malaria there was, coincident with the departure of military units, a decided fall in the number of benign tertian cases, from 308 in 1918 to 90 in 1919.

In the outbreak of typhoid practically all the cases yielded *B. typhosus* on cultivation of the blood, allowing a diagnosis in 48 hours. As well with mild as with severe cases it was the exception to obtain a positive Widal before the end of 14 days, and in some cases before the close of the third week [*cf.* this *Bulletin*, Vol. 19, p. 616]. In two cases each of paratyphoid A and B in natives, blood culture was unsuccessful but the Widal was positive.

Though the cause is not obvious, the number of dysentery stools sent for examination, and of cases in Nairobi, was much less than in the previous year. The prevalence of the bacillary type during the war has ceased, since this year only one bacillary case (Flexner) was found as against 32 of *E. histolytica*. No amoeba corresponding to *E. nana* was seen.

Attention is called to the prevalence of helminth infections and the need for further investigation. Bilharzia was found in natives living close to Nairobi, but so far the search for infected snails has been negative.

Several cases of fever occurred, with pyrexia of 3–4 weeks, undiagnosed ; enteric and undulant fever were of course excluded.

Notes on the present accommodation at the Bacteriological Laboratory show that it is situated in a main artery of traffic where dust is constant, close to latrines where the excreta are exposed to the numerous flies, and with no accommodation for ice plant, and it is pointed out that re-erection on a fresh site is requisite.

The report opens with a cogent presentation of the economic value of a well-staffed and wisely used bacteriological laboratory in the tropics.

A. G. B.

South African Institute for Medical Research. **Annual Report for the Year ended 31st December, 1921.** [Watkins-Pitchford (Wilfred), Director.]—47 pp. With 2 illustrations. 1922. Johannesburg : Published by the South African Institute for Medical Research, P.O. Box, 1038.

Research Division.—The antiscorbutic value of certain items of the native workers' dietary was investigated. Kafir beer, suitably prepared, was found to be equivalent in this respect to fresh milk. Germinated cow-peas if consumed raw had a definite value, whereas germinated soy-beans had little or none ; pawpaws, naartjes (tangerine oranges) and oranges had well-marked antiscorbutic properties.

It having been asserted that workers in the copra industry do not suffer from *tuberculosis* and may recover if already affected, a guinea-pig was inoculated and treated by injections of coconut oil, without benefit. In a series of 47 cases treated after Rogers' manner with morrhuate of soda, 19 were benefited and of these 7 showed "remarkable improvement."

Thirty-seven strains of *meningococcus* were investigated as to their type classification ; 23 corresponded with Gordon's Type I and 3 with Gordon's Type II. No representative of Gordon's Types II and IV was met with.

Of 20 strains of pneumococcus obtained by lumbar puncture from cases of *pneumococcal meningitis* 15 were not classifiable into any recognized group and none came in group A. A few years ago group A was responsible for the majority of these infections and this change is regarded as evidence of the value of routine prophylactic inoculation with pneumococcal vaccine. Similarly, whereas from 70 to 75 per cent. of cases of lobar pneumonia were formerly assignable to groups A, B and C, it is now unusual to meet with these groups ; pneumonia is now of broncho-pneumonic type and *B. influenzae* can be isolated from a large percentage of the lungs.

In an investigation of *tropical ulcer*, 73 cases, *B. fusiformis*—only occasionally associated with the spirillum—was almost constantly present. Excision and curetting were of no greater value than local treatment with novarsenobillon.

Three kinds of snails have now been convicted of harbouring cercariae of *Schistosoma mansoni* in S. Africa, viz., *Planorbis pfeifferi*, *Physopsis africana* and *Isidora tropica ;* the author notes the adaptability of this

cercaria. Experiments have proved that sexually mature adult tapeworms can be reared in experimental animals from cysts frozen solid for as long as eight weeks.

Routine Division.—The African native is commonly believed to be nearly or quite immune to *B. diphtheriae*, but organisms with morphological and staining characters typical for this bacillus were grown from a large number of throat swabs, as well as from nasal and conjunctival swabs, and when isolated in pure culture agreed with the specific bacillus. In many of the cases inflammation of the fauces, often with definite though scanty membrane, was noted, and cases which received specific treatment in the early stages got rapidly and completely well.

Examination in dysentery cases revealed *E. histolytica* in 51 instances and bacillary dysentery in 7 (Shiga in 2, Morgan's group in 5) ; many cases clinically diagnosed as dysentery were the subjects of flagellate diarrhoea.

As in the previous year [see this *Bulletin*, Vol. 19, p. 615] many cases of *enteric* fever failed to give a positive Widal's reaction, so that practitioners are urged not to set too great value on this serological test. Some puzzling cases gave agglutination with more than one member of the enterica group ; a well-marked agglutination with paratyphoid C was obtained twice.

As a result of 505 Weil-Felix agglutination tests, 212 of which were positive, it is pointed out that a larger proportion of true *typhus* cases in S. Africa fail to give this reaction than occurs elsewhere, and such high titres as elsewhere are not as a rule reached. Dr. Pearson, of Kimberley, considers a 1 : 50 positive reaction as diagnostic of typhus. Reasons for the lack of sensitiveness of the test are suggested, of which the most significant seems to be the lack of local strains of X 19.

A. G. B.

Annales de la Société Belge de Médecine Tropicale. Brussels. 1922. Dec. Vol. 2. No. 2–3. pp. 165–173.—**Fonctionnement du Laboratoire de Léopoldville pendant l'année 1921.**

The number of examinations for sleeping sickness was 22,433, in the course of which glands were punctured 7,677 times, and the blood and cerebrospinal fluid examined 805 and 337 times. Of 119 infected persons 77 were diagnosed by gland puncture, and 42 by blood examination after centrifugation. Trial of various remedies for the disease showed that stibenyl is in no way superior to tartar emetic, nor silver salvarsan to arsenobenzol, and that sulfarsenol is superior to neosalvarsan only in that it can be conveniently given either by intramuscular or subcutaneous injection. In Marshall's method "the serum does not appear to have a trypanocidal action in the nerve centres, and does not promise amelioration of grave cases. It is certainly not the treatment of choice in sleeping sickness."

Of T.A.B. vaccine 7,500 doses were supplied, and stocks of 20,000 doses are kept on hand. In 1,222 examinations of faeces schistosome eggs were found 57 times, a considerable proportion with a terminal spur ; this affection is found only in extra-Leopoldville natives.

The Bordet-Wassermann reaction is positive in yaws in about the same proportion as in syphilis and is diagnostic of yaws in tertiary lesions when syphilis can be excluded. In each disease it may be difficult to render negative, and in yaws as in syphilis disappearance

of cutaneous lesions is not synonymous with cure. Not only must recovery be tested by the B.W. reaction but this reaction must be renewed at intervals to make sure that the cure is permanent.

The authors have failed to inoculate the rabbit from smallpox lesions and have obtained only negative results with PAUL's corneal procedure [see this *Bulletin*, Vol. 19, p. 440], but have succeeded with NOGUCHI's test of inoculation into rabbit's testicles. Among patients treated for smallpox there were at least a sixth showing evidence of recent vaccination.

Six leprous patients were treated with injections of tartar emetic, a total of 2 gms., without benefit.

Hospital assistants and missionaries can obtain a course of instruction at this laboratory in the use of the microscope in the campaign against sleeping sickness and other infectious diseases. In 1921, besides 7 doctors, 3 sanitary inspectors and 24 missionaries availed themselves of this privilege.

A. G. B.

FEDERATED MALAY STATES. **Annual Report of the Institute for Medical Research for the Year 1921.** [FLETCHER (William), Acting Director, Government Laboratories, F.M.S.]—13 pp. Kuala Lumpur: F.M.S. Govt. Press. [Price not stated.]

This admirable report is largely occupied by an inquiry into the quinine treatment of malaria and an investigation of dysentery, which will be noticed in their appropriate places.

Melioidosis.—The history is sketched of the discovery of this glanders-like disease, formerly described under the names of pneumo-enteritis and pseudo-cholera, since it was recognized in Rangoon by WHITMORE in 1911 [see this *Bulletin*, Vol. 19, p. 617]. It is thought to be a natural disease of rodents conveyed to man by contamination of food with their excreta. A few cases were encountered in 1921; two, the first observed cases of recovery, were treated after 3 and 8 months respectively, the usual course being 10 days.

Venereal Disease.—GATÉ and PAPACOSTAS' formol-gel reaction for syphilis was tested with 1,193 specimens and compared with the Wassermann reaction. It was positive in 250 cases where the Wassermann was negative and negative in 92 cases where the Wassermann was positive. It is hence of no diagnostic value. Nearly 4,000 Wassermanns were done, but it was found that many of the specimens sent from a distance arrived in a condition unfit for testing.

Enteric Fever.—Of 518 agglutination tests the reaction was positive in 102 with *B. typhosus*, in 22 with *B. paratyphosus* B, in 7 with *B. paratyphosus* A, and in 22 with both typhoid and paratyphoid. Only two carriers of enteric organisms were detected during the routine examination of more than 1,000 cases of dysentery.

A. G. B.

MAURITIUS. **Report of the Bacteriological Laboratory for the Six Months ended 30th September, 1922.** [MOMPLÉ (F. J. R.), Ag. Govt. Bact. & Analyst.] [M.S. Report received from the Colonial Office.]

This report shows that 70 cases of enterica were diagnosed by agglutination and 4 by blood culture, that the diphtheria bacillus

was isolated from 6 throat swabs, that of 196 samples of faeces, ova of trichocephalus were found in 111, of ankylostomes in 67 and of ascaris in 36, that of 90 urines microscopically examined Bilharzia ova were found in 18. Typhoid vaccine was made and 390 persons were vaccinated.

A. G. B.

HEINEMANN (H.). **Untersuchungen ueber den praktischen Wert der Meinickeschen Trübungsreaktion und der übrigen serodiagnostischen Methoden im tropischen Lande.** [The Practical Value of Meinicke's Flocculation Test and other Serodiagnostic Methods in the Tropics.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1922. Vol. 26. No. 12. pp. 369–379.

The author has carried out about 7,000 serum tests by Wassermann, Meinicke, and Sachs-Georgi methods among the population of Java, and gives details (see table below) of a thousand of them. His purpose, however, is not so much to compare these different methods as to appraise the practical diagnostic value of any of them in ordinary tropical practice ; and his conclusion seems to be that in dealing with the elements of a native populace the results of serum diagnosis must be entertained with infinite caution, as they "have a value only in the frame of the entire clinical picture."

TABLE showing Serum Reactions of 1,000 Javanese coolies of both sexes by Wassermann and Meinicke Tests.

DIAGNOSIS.	W+ DM+ MTR+	W− DM− MTR−	W+ DM+ MTR−	W− DM− MTR+	W+ DM− MTR+	W− DM+ MTR−	W− DM+ MTR+	W+ DM− MTR−	Total.
Primary Syphilis	12	5	—	2	1	1	1	—	22
Secondary Syphilis ..	12	5	—	2	—	1	—	—	20
Tertiary	44	16	—	9	2	—	7	—	78
Secondary Yaws	28	8	1	—	1	—	2	—	40
Tertiary Yaws	25	8	—	1	3	—	3	—	40
Benign Tertian Malaria ..	5	24	—	1	1	—	1	2	34
Malignant Tertian Malaria	37	81	2	9	6	—	3	8	146
Quartan Malaria	—	—	—	—	—	—	1	—	1
Chronic Malaria	15	35	2	13	1	—	—	6	72
Fever "ohne Befund" ..	10	47	1	3	4	1	3	3	72
Ulcus Tropicum	6	30	—	3	—	—	1	—	40
Influenza and Pneumonia	17	45	2	7	1	—	2	—	74
Nihil	9	34	—	—	—	—	—	1	44
Gonorrhoea	4	16	—	5	—	—	2	—	27
Bubo	2	13	—	—	—	—	—	—	15
Staphylococcus	1	41	—	4	2	—	—	2	50
Other Miscellaneous Dis.	13	176	4	24	4	—	—	4	225
TOTAL	240	584	12	83	26	3	26	26	1,000

W=Wassermann. DM=Meinicke Flocculation Test.
MTR=Meinicke Trübungsreaktion.

A. A.

WEBB (W. Leslie). **The Original Sachs-Georgi Reaction in the Tropics as an Indication for Diagnosis and Treatment of Syphilis.**—*Jl. Roy. Army Med. Corps.* 1922. Aug. Vol. 39. No. 2. pp. 98–108.

During the year 1921 over 2,000 serums were tested by the Sachs-Georgi reaction at the Venereal Diseases Hospital at Mulago in Uganda, though less than half of them were controlled by comparison with the Wassermann reaction. The author describes his technique, tabulates his results, and states the following conclusions :—

"A comparison between the two tests as performed in the laboratory at Mulago leads to the following conclusions :—

"1. That the Sachs-Georgi reaction gives a considerably lower percentage of positive results in all cases of syphilis, including untreated cases, than the Wassermann reaction.

"2. That the two reactions agree in only 74 per cent. of cases, and that of the remaining 26 per cent. of cases 19 per cent. are positive to the Wassermann reaction and negative to the Sachs-Georgi reaction, and 7 per cent. are positive to the Sachs-Georgi reaction and negative to the Wassermann reaction.

"3. That the Sachs-Georgi reaction shows a very decided tendency to become negative as treatment progresses irrespective of the clinical condition of the patient and of the probability of his cure.

"4. That, consequently, the Sachs-Georgi test is not a reliable indication of cure in cases of primary and secondary syphilis.

"5. That a positive Sachs-Georgi reaction in cases of syphilis or suspected syphilis would appear to be as valuable as a positive Wassermann reaction as an indication for commencement or continuation of treatment, but that a negative Sachs-Georgi reaction is of very little value.

"6. The Sachs-Georgi reaction is more difficult to read than the Wassermann reaction, which leads to a high percentage of doubtful readings. In most of the results given the combined percentage of positive and doubtful Sachs-Georgi reactions corresponds very closely to the percentage of positive Wassermann reactions.

"7. That the Sachs-Georgi reaction appears to be as specific for syphilis as is the Wassermann reaction.

"8. That in spite of the obvious inferiority of the Sachs-Georgi reaction to the Wassermann reaction, it has a very useful application indeed in those tropical countries where it is difficult to perform the Wassermann reaction satisfactorily, and I strongly recommend its adoption as a routine diagnostic agent in these circumstances."

In the second section of the paper the author describes further experiments and their technique and tabulates the results of comparisons between the Sachs-Georgi reaction with Sachs-Georgi antigen and the same reaction with Bordet-Ruelen antigen, and of both of these with the Wassermann reaction. The following is a summary of results for the three reactions in active cases of secondary syphilis :—

	Serum.	Positive.	Doubtful.	Negative.
		per cent.	per cent.	per cent.
Sachs-Georgi with S.G. antigen ..	383	74	11	15
Sachs-Georgi with B.R. antigen ..	383	80	7	13
Sachs-Georgi with S.G. antigen ..	259	71	14	15
Wassermann	259	94	3·5	2·5
Sachs-Georgi with B.R. antigen ..	258	81	7	12
Wassermann	258	94	3	3

A. A.

Dawson (A.) & Smith (R. O. A.). **Comparison of the Wassermann Reaction with the Sachs-Georgi Reaction and with the Sigma Reaction of Dreyer and Ward.**—*Jl. Roy. Army Med. Corps.* 1923. Feb. Vol. 40. No. 2. pp. 128–132. With 1 text fig.

In 246 Sachs-Georgi tests the authors were fairly satisfied with the results until they got a negative result with seven sera which were clinically secondary syphilis and gave a strongly positive Wassermann reaction—possibly explicable by the fact that they were at that time putting up the S G test with only one dilution of serum and antigen. Of the 246 S G tests so conducted 85·4 per cent. were in agreement and 14·6 per cent. in disagreement with the Wassermann test.

Later, the authors have carried out 1,148 tests of 1,005 sera by the sigma test of Dreyer and Ward, following in the main the technique described in the *Lancet* of May 7, 1921, and preparing the antigen by the formula of Bordet and Ruelens—chopping the heart into quarter-inch cubes, not mincing it. In reading the results they found that flocculation almost always increases after the usual seven hours, and occasionally might not be present after that interval but might occur later. Of the 1,148 Dreyer-Ward tests, 92·6 per cent. were in agreement and 7·4 per cent. in disagreement with the Wassermann test ; and among these incongruities 2·52 per cent. were Dreyer-Ward negative to Wassermann positive, 4·09 per cent. Dreyer-Ward positive to Wassermann negative, and 0·78 per cent. Dreyer-Ward negative to a " partial " positive Wassermann.

The authors are of opinion that the Dreyer-Ward test is as reliable as the Wassermann in the diagnosis of syphilis ; but it takes much more time to put up, and is tiresome and fatiguing to estimate.

A. A.

Harold (C. H. H.). **The Euglobulin Group and its Relationship to the Wassermann Reaction.**—*Jl. Roy. Army Med. Corps.* 1922. Aug. Vol. 39. No. 2. pp. 83–97.

The author, observing that the Wassermann substances due to malaria and syphilis come down in the globulin group and are to a certain extent capable of concentration without becoming unduly anti-complementary, planned a considerable series of differential precipitation experiments by various methods in order to determine the relation of the different precipitates to the Wassermann reaction. From these experiments, which are all fully recorded, he concludes that Friedemann's theories that the euglobulin group when precipitated by ammonium sulphate is anti-complementary, and that the positive Wassermann reaction is an intensification of anti-complementary powers, are untenable. His own conclusions from his own experiments are as follows :—

" 1. The Wassermann bodies are solely contained in the euglobulin group and are capable of complete precipitation with this group by dilution acetic acid methods.

" 2. The amount of precipitable euglobulin in syphilitic sera varies directly as the strength of the Wassermann reaction. This can be verified by opacity tests, estimation of bulk after centrifugalization and Kjeldhal estimations.

" 3. As a test for syphilis dilution acetic acid methods have possibly a place in clinical medicine.

"4. By separation and concentration of the euglobulin group from a (+) serum (= 3 M.H.D. complement deviation) it has been possible to make a solution which with antigen deviates 12 M.H.D. of complement and is not anti-complementary.

"5. The Wassermann bodies are intimately bound up with the euglobulin group, but by careful treatment of a syphilitic serum with CO_2 and acetic acid it appears possible to separate out: (1) The main euglobulin group plus a fraction of Wassermann bodies; (2) a fine film of precipitate which has stronger deviating powers in proportion to its bulk than the whole euglobulin group and at the same time it is not anti-complementary.

"6. Precipitation methods employing ammonium sulphate do not lead to great concentration of the Wassermann bodies, but result in marked anti-complementariness with the higher saturations.

"7. The haemolytic bodies in haemolytic amboceptor, unlike the Wassermann bodies, are chiefly contained in the pseudoglobulin group.

"8. In malaria, under certain conditions, bodies may appear in serum which belong to the globulin group and react in the same way as the Wassermann bodies."

A. A.

DUBOIS (A.). **Séro-réaction syphilitique par le procédé Levaditi au Congo.**— *Ann. Soc. Belge de Trop. Med.* Brussels. 1922. Dec. Vol. 2. No. 2–3. pp. 249–252.

In the Congo there are many obstacles (*e.g.*, scarcity of guinea pigs) to the carrying out of the Bordet-Wassermann serum test in all its full and exacting technique. The author, having learnt that BRUCK's more simple method was inapplicable to Africa, since it gave a positive result in most blacks, was led to try, on a series of cases, the majority negroes, LEVADITI's test (HECHT's method), which makes use of the natural property of fresh human serum to haemolyse sheep's red corpuscles. Bordet's or Levaditi's antigen was employed. The serum to be tested was taken in the afternoon and examined the next morning (haemolytic properties persist for at least 48 hours at laboratory temperature). Three serum tubes were used according to the following scheme.

	Tube.	Saline.	Antigen.	Serum.	1½ hours at 37° C.	Sheep's redcorps. 5 pr. cnt.	Results. Positive Serum.
.. ..	1	0·2	0·1	0·1		0·1	No haemolysis 1
.. ..	2	0·1	0·2	0·1		0·1	No haemolysis 2
Control	3	0·3	—	0·1		0·1	Haemolysis .. 3

A negative serum would give haemolysis in all three tubes.

A serious fault was that, of 118 tests, 13 gave no haemolysis at all in the control tube (3), these serums lacking, apparently, haemolytic property.

The series of cases (118) included syphilis, yaws, tick fever, trypanosomiasis, leprosy, tropical ulcer, smallpox, malaria and certain pathological conditions of doubtful syphilitic origin.

The tabulated results of the test on these cases give considerable support to the author's claim that a *definitely* positive reaction is not obtained except in syphilis, yaws, and perhaps tick fever.

H. M. Hanschell.

DIACONO (Hector). **Séroréaction de la syphilis. Une nouvelle réaction au péréthynol par emploi du sérum de cobaye antimouton.**—*Arch. Insts. Pasteur de l'Afrique du Nord.* 1922. June. Vol. 2. No. 2. pp. 219–226.

Being unable always to obtain pigs' serum, the author has used guinea-pigs' serum made haemolytic to sheeps' red corpuscles by injecting the latter into the guinea-pigs' peritoneal cavity according to RUBINSTEIN's method. This serum he has used, instead of pigs' serum, with the péréthynol. The author describes in detail his methods of preparing the reagents and his technique as applied to the test itself, and claims for this modification of the Vernes' reaction an increased simplicity, constancy, and certainty of results.

The Vernes' test is briefly as follows:—Péréthynol is an alcohol and ethylene dichloride extract of horse heart: this mixed with distilled water gives a colloidal suspension of a certain uniform opacity. When properly diluted this suspension gives varying degrees of flocculation with syphilitic serum, proportional to the intensity of infection; and no flocculation with a normal serum. The degree of flocculation is measured by adding pigs' serum. The pigs' serum prevents flocculation in a péréthynol-syphilitic-serum mixture, and in doing so loses its property to dissolve sheeps' red corpuscles. A strong positive reaction would therefore show no haemolysis and a negative reaction complete haemolysis with sheeps' red corpuscles. Recently Vernes has dispensed with pigs' serum and red corpuscles, and measures the flocculation directly by means of an "*opacimeter.*"

[Dr. Vernes "*Syphilimetry*" is reviewed in the *British Medical Journal*, May 5, 1923, wherein it is stated that the method does not command universal approval in France and has not yet been generally accepted by syphilologists and pathologists.]

H. M. Hanschell.

BRODEN (E.). **La réaction de B. G. Σ. dans les affections tropicales.**—*Bruxelles-Médical.* 1922. July. Year 2. No. 17. pp. 420–422.

The author employed the method (modified) of CALMETTE and MASSOL, as did in 1915 MATHIS and his collaborators [this *Bulletin*, Vol. 6, pp. 102, 130], who obtained negative results in cases of leprosy and malaria. He used the Bordet-Ruelens antigen from the Pasteur Institute of Brabant. He gives the notes of three cases of malaria, four of filariasis (*loa* and *perstans*), and three of sleeping sickness, all in Europeans and diagnosed by microscope. In no instance was deviation of the complement provoked.

A. G. B.

Fifth Congress of the Far Eastern Association of Tropical Medicine, to be held at Singapore, 3–17, 1923.—63 pp. With 2 plates. Printed at the Methodist Publishing House, Singapore.

The Far Eastern Association of Tropical Medicine was founded by the Americans in the Philippines, and its first Congress was held in 1910 in Manila, which has been a University town since the early Spanish days, 300 years ago. The second Congress was held in 1912, in Hongkong; the third in 1913, in Saigon; and the fourth in Batavia, in 1921. To the coming Congress this little book is a guide, containing not only technical instructions, but also useful information about Singapore, and about Malaya in general.

The Congress is to be constituted in four sections—Physiology, Pathology, Medicine and Surgery, and Hygiene. All members of the medical profession and workers in kindred branches of science will be welcome, on application to the Secretary, Dr. J. W. SCHARFF, at Singapore, and on payment of the subscription of 20 dollars. Papers from members unable to attend may be sent to be read by the Secretary, and should reach him on or before the 23rd July, 1923. Medical and surgical exhibits will be placed on view in the Congress Hall.

In contrast with Trengganu, one of the Protected Malay States, which has no railways or telegraphs and only ten miles of road, Singapore, the capital of the Straits Settlements, is furnished with all the apparatus of the most elegant European civilization. Those of its institutions that have a particular attraction for the medical profession are here described; they include the earliest (Chinese) hospital, built in 1844, by the generous Tan Tock Seng; the General Hospital —about to be translated to a modern building accommodating 825 beds; the Hospital for Women and Children, the Middleton Hospital for Infectious diseases, the Free Maternity Hospital, the Lunatic Asylum, sheltering over 400 male patients, the Central Sanitary Depôt, with its facilities for training sanitary inspectors, the Quarantine Station, capable of accommodating 5,000 native deck-passengers, and the King Edward VII College of Medicine, whose diploma is recognized by the General Medical Council of Great Britain.

A. A.

ANGOLA. **Primeiro Congresso de Medicina Tropical da Africa Ocidental a realizar em Angola, na cidade de Loanda, nos dias 16 a 23 de Julho de 1923, sob o patrocinio e a presidência de honra de Sua Ex. O General José Mendes Ribeiro** NORTON DE MATOS, **alto Comissário da República em Angola. Regulamento e Programa do Congresso, compreendendo o decreto no. 214, de 13 de Dezembro de 1922, a circular de convite pormenores de organização e outras informações de interesse para os congressistas.**—pp. 24. 1922. Loanda. Composto e impresso na Imprensa Nacional de Angola.

The Medical Services of Angola, Belgian Congo and French Equatorial Africa have resolved to have periodical reunions of the Medical Officers of the respective colonies, and it is announced that the First Congress of Tropical Medicine of West Africa will be held at St. Paul de Loanda in Angola in July 16–23, 1923. The Government of Angola will provide board and lodging for the delegates as well as transport from Lisbon or an African port. The President of the Council of Organization is Dr. A. DAMAS MORA, and the secretary, Dr. GERMANO CORREIA.

Application should be made to Repartição Superior de Saúde e Higiene de Angola, St. Paul de Loanda, *or* Agència Geral de Angola, Rua da Madalena, 237, 1o. Lisbonne.

A visit will be paid to St. Thomé and to the plateaux of Benguela and Mossamedes.

A. G. B.

Drummond (J. C.) & Zilva (S. S.). **Studies of the Nutritive Value of the Edible Oils and Fats. I. The Oil-bearing Seeds and Crude Vegetable Oils and Fats.**—*Jl. Soc. Chem. Industry.* 1922. Apr. 29. Vol. 41. 3 pp.

Hartendorp (A. v. H.). **Some Results with Intelligence Tests in the Philippine Islands.**—*Philippine Jl. Sci.* 1922. Mar. Vol. 20. No. 3. pp. 287–307. With 8 charts.

van Heyningen (A. Kits). **Beitrage zur Psychologie der primitiven Menschen.**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 2. pp. 69–77.

Höppli (R.). **Lungenveränderungen beim Kaninchen infolge Schimmelpilzinfektion.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1922. Mar. Vol. 26. No. 3. p. 83.

Kampman (A.). **Over de kreosootbehandeling van Influenza.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 1. pp. 27–30.

Kehrer (J. K. W.). **Twee gevallen van bloeding uit de lever.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 1. pp. 89–92.

Kerneis & Baujean. **Anemie pernicieuse chez une femme enciente.**—*Bull. Soc. Méd.-Chirurg. française de l'Ouest-Africain.* 1920. Jan. Vol. 2. No. 1. pp. 24–28.

Müller (H.) **Constitutiekenmerken bij het Maleische ras en Chineezen.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 1. pp. 1–19.

——. **Over een geval van Pneumatosis cystoides intestini in de tropen.**—*Tijdschr. v. Vergelijkende Geneesk., enz.* Leiden. 1923. Apr. 28. Vol. 8. No. 4. pp. 178–184. With 5 figs. [English summary p. 184.]

Paez (Félix R.). **Informe anual de la Direccion del Hospital Ruiz 1922.**—23 pp. 1923. Venezuela: Tip. La Empresa—Suegart, Cuidad Bolivar.

Pillay (A. P.). **Treatment of Chronic Gonorrhoea. A Few Cases.**—*Indian Med. Gaz.* 1923. Feb. Vol. 58. No. 2. pp. 71–72.

Wade (H. W.). **On the Bacteriophage of d'Herelle.**—*Trans. 4th Congress Far Eastern Assoc. Trop. Med.* 1921. Vol. 1. p. 195.

Widal (F.), Abrami (P.) & Joltrain (Ed.). **Anaphylaxie à l'ipeca ; un cas d'eczéma par contact avec l'émétine ; un cas d'asthme par inhalation de poudre d'ipéca.**—*Presse Méd.* 1922. Apr. 22. Vol. 30. No. 32. pp. 341–344.

REVIEWS AND NOTICES.

The Practice of Medicine in the Tropics. By Many Authorities. Volume 3. Edited by BYAM (W.) [O.B.E.; Lieut.-Colonel, Royal Army Medical Corps (retired); etc.] and ARCHIBALD (R. G.) [D.S.O., M.D.Edin.; Major, Royal Army Medical Corps (retired); Director of the Wellcome Tropical Research Laboratories, Sudan Government, Gordon College, Khartoum; etc.].—xx + 1685–2550 pp. and index. Figs. 581–929; plates 67–96. 1923. London: Oxford Medical Publications. Henry Frowde and Hodder & Stoughton. [Price £4 4*s*.]

Section XI.—Helminthiasis (pp. 1685–1965).

This subject is very fully treated in some 270 pages. To *Schistosomiasis* are devoted 77, to *Ancylostomiasis* 30, to *Filariasis* 51, and to Hydatid-disease 11 pages. Clayton LANE contributes an introduction of 26 pages.

On looking through the classification of worms we marvel at the complexity of the subject—the *Necatorinae*, the *Necatoridi*, the *Necator*—the *Ascaridata*, the *Ascaroidea*, the *Ascaridae*, the *Ascaris*!

Has it come to this—that nobody can identify a mosquito, a tick, a worm or what not, except a few experts? We are afraid it is so. When again we look at the illustrations we find that practically all the old familiar pictures of *Taenia solium*, *Cysticercus cellulosae*, *Bothriocephalus latus*, *Ascaris lumbricoides* and the like have all gone, and we have, for example, "the axial portion of a proglottis reconstructed from serial sagittal sections," accompanied merely by a scale of *Diphyllobothrium stemmacephalum*. In fact, if this is a different species from *D. latum* we have no illustrations of the latter worm at all.

Our view is that this method—we suppose it is the method of helminthology—has been carried to excess, and we long to see a good picture of the actual worm in addition to that of an "imaginary specimen reconstructed from serial sagittal sections checked by comparison with serial transverse sections" of *Metagonimus yokogawai*.

We must, however, we fear, bow to the inevitable, recognise that we are old-fashioned and out of date; that we have here given us an account of parasitic worms which will well serve the purpose of several generations of those practising medicine in the tropics.

May we be forgiven one private grumble? Our ears still tingle with the impact of the horrid word "infestation"—"bestial infestations" they are called in one place—and we cannot yet reconcile ourselves to headings like "Trematode infestations other than haemal" and "Somatic infestations other than hydatid."

J. W. W. Stephens.

Section XII.—Diseases caused by Physical Agents (pp. 1967–1981).

Section XII contains a single chapter on "Heat-stroke" and "Sunstroke" from Professor W. J. R. SIMPSON, who writes with a full knowledge of the views of such authorities as FAYRER, MANSON, and ROGERS, and a no less intimate acquaintance with the more recent contributions of WILLCOX and others.

When considering treatment, the author notes that strychnine is contra-indicated owing to its tendency to cause convulsions. Cases have, however, been published comparatively recently in which hypodermic injection of this drug was included in the treatment successfully adopted. Much, doubtless depends, upon dosage.

Not long ago [*Brit. Med. Jl.*, 1920, June 12, pp. 795–6] an observer reported that in a series of cases occurring at Nasiriyeh vomiting was an invariable sign of recovery. This feature does not appear to have been included in the experience of other authorities, as it receives no mention here.

J. J. Pratt.

Section XIV.—Diseases of Doubtful Causation (pp. 2063–2272).

Section XIV, of over 100 pages, is devoted to the following 13 diseases :—Typhus, Rocky Mountain spotted fever, trench fever, the tsutsugamushi disease or Japanese river fever, Oroya fever, verruga peruviana, dengue, phlebotomus fever, imperfectly differentiated fevers of the tropics, rabies, smallpox, tick paralysis, goundou and sprue. If we take the last disease as an example, here, as in all diseases of doubtful causation, we are immediately faced by the question, How do we diagnose the condition ? In many cases there is a syndrome of symptoms which we may reasonably call sprue, but in many other cases we do not know whether we are entitled to call the condition sprue or not. We have, for instance, seen cases of so-called sprue, being treated with streptococcal vaccines and so forth, which did not appear to us to merit the diagnosis sprue at all. When from time to time in the literature we read of three-day fevers which last more than three days, and of seven-day fevers running an afebrile course ; of dengue with and without pains in the bones, with and without rash, with and without fever, of atypical dengues, of pseudo-dengues, of five or six-day fevers (why are there no four-day fevers ?), we then feel that we are well above terra firma and are exceedingly doubtful when we shall return there. These articles, however, provide us with the best means at our disposal for navigating these cloudy regions.

Goundou seems to be curiously placed in this list, for if goundou why not also ainhum and juxta-articular nodules, and especially why not influenza ?

Dengue, one of the most mysterious of diseases, is fully treated by Cleland. We wish he had told us more of those devastating epidemics recorded in the past—or were these influenza ?—also that space could have been spared for the actual experimental evidence on which the transmission by *Stegomyia fasciata* is based. In the differential diagnosis twelve diseases are mentioned which may be confused with dengue, but we should not include malaria among these, for surely it is only the "Die-hards" who still diagnose malaria by the "typical rigor" and not by finding the parasites. Under treatment we find it stated that "Calcium chloride is useful when haemorrhages or urticaria occur." We would much like to know whether this is really true.

On page 2196 it is stated "that in many of these fevers reliance for their diagnosis and differentiation has been placed entirely upon clinical symptoms, a method of diagnosis notoriously uncertain and unscientific in fevers occurring in any climate, and especially in the tropics." This goes to the root of the whole evil. How can we differentiate A and B if we cannot recognise A and B when we see them, and when we do not even know whether A and B have any real existence !

If we ventured to express an opinion on the whole of this system of medicine, surely it would be a laudatory one. It has been a notable achievement.

J. W. W. Stephens.

Section XV.—Regional Diseases (pp. 2273–2319).

Section XV contains chapters on "Diarrhoea in the Tropics," "Ophthalmology" and "The Heart in Chronic Tropical Diseases."

Major John Cunningham, I.M.S., touches briefly and lightly upon the first of these subjects, with reference not so much to the diseases in which looseness of the bowels forms part of a syndrome as to those in which this condition, initially at any rate, constitutes the chief or only manifestation of diseased or disordered function.

Three pages are devoted to "Hill Diarrhoea," and it is worthy of note that the treatment still regarded as most satisfactory in its results is that recommended by Crombie thirty years ago.

In Chapter 106, "Ophthalmology," Lieut.-Colonel R. H. Elliot, I.M.S., compresses into the short space of 26 pages an individual contribution of conspicuous merit. The chapter specially recommends itself to tropical

practitioners by the fact that it deals almost exclusively with diseases of the eye as seen in the native races which have provided the clinical material from which the author's unrivalled experience has in large measure been derived.

Colonel ELLIOT's views are set forth clearly and attractively and with marked descriptive power, and the reviewer is content to leave this chapter to the assured appreciation of its readers. The illustrations are good and include some beautiful coloured plates.

In Chapter 107 Dr. R. M. WILSON gives a short and interesting account of "Conditions of the Heart met with in Chronic Tropical Diseases." Organic disease in these cases is very rarely encountered. The chapter is illustrated with instructive sphygmographic tracings.

Section XVII.—Diseases of Women (pp. 2471–2498).

Section XVII is by Dr. Grace MACKINNON. After incidental references to the barbarous and septic ministrations of indigenous midwives, to the evils consequent upon early marriage, and to the imaginary influence of evil spirits and offended deities as etiological factors in disease, the author considers "climate conditions" affecting the production of the neurasthenic syndrome and the effect of hot climates on the advent of menstruation, the increase of menstrual flow, and the aggravation of menorrhagia or metrorrhagia.

The portion of the chapter which deals with the effects of malaria on the normal sexual functions of women, on pregnancy, the puerperium, and diseases peculiar to women provides good reading. The author lends the weight of her experience to exposure of the folly of the once widespread idea that quinine, even in moderate doses, is contra-indicated in pregnancy. The necessity, moreover, of giving the drug after childbirth in malarial subjects is wisely insisted on.

Osteomalacia, a disease almost limited to the female sex and most common in multiparous women, is frequent in parts of India, and is usually productive of such pelvic deformity as to make natural labour impossible. An excellent account of predisposing causes, treatment and prophylaxis is given, and the fact recorded that immediate arrest of the disease has followed the removal of both ovaries.

A short account is given of "Sutica," a fatal form of chronic diarrhoea occurring in puerperal women and frequently seen in Bengal.

Dr. MACKINNON's contribution is specially worthy of study by those proceeding to the tropics to take up appointments in connexion with hospitals for women. It must not, however, be regarded as in any way complete in itself.

Section XVIII.—Surgery (pp. 2499–2550).

Section XVIII is by Professor F. C. MADDEN, of Cairo. Like most surgeons of tropical experience, he favours chloroform, in the absence of special contra-indications, whenever a general anaesthetic is required. He has, however, for years past resorted, whenever possible, to spinal anaesthesia by stovain with great success. His experience is that in spite of the many adverse factors peculiar to hot climates and their inhabitants, tropical patients stand operations well, and that these can be quite successfully carried out.

The influence of malaria as a cause of conditions calling for surgical attention, as producing close simulations of many serious affections, and furnishing grave post-operative complications, is emphasized, and the surgeon advised to protect himself by a routine blood examination before operation.

The oral lesions of visceral Leishmaniasis and various forms of dermal Leishmaniasis are briefly referred to. It is interesting to learn that for some of the latter met with in Egypt and the Sudan the most satisfactory treatment is complete excision followed by skin-grafting.

In Egyptian splenomegaly, essentially a disease of malnutrition and non-malarial and non-parasitic in origin, excellent results follow splenectomy if undertaken at an early stage.

Of appendicostomy in the chronic diarrhoea of amoebiasis the author speaks without enthusiasm. To caecostomy, either open or valvular, in dysentery of either type he does not allude. Surgeons with experience of the treatment of hepatic abscess by aspiration and emetine will by no means concur in the dictum that this method is only likely to be successful when the collection of pus is quite small. The proved efficacy of the method introduced by ROGERS in abscesses of all sizes constitutes one of the most striking of recent advances in medicine.

Under filariasis the author describes the method of operation which he practises in removal of the elephantoid scrotum: most surgeons devise methods either wholly or partly their own. Surgery being generally regarded as of little avail in elephantiasis of the lower extremity, it is pleasing to read of improvement and relief following on Kondoleon's operation.

A clear and concise account is given of rhinoscleroma, a disease of which the author has considerable experience, but which hardly admits of surgical treatment.

The effect of spirochaetal infections, either primary or superimposed on bilharzial lesions in production of papillomatosis of the perineum and pudenda is described and illustrated, as is also another spirochaetal lesion, "Granuloma labiale."

Some well-illustrated pages are devoted to special features of surgery in the tropics.

Professor MADDEN's section will specially appeal to many readers on the same grounds as the chapter on "Ophthalmology," treating as it does almost entirely of diseases and conditions encountered among the native inhabitants of the country where the author's work has been carried on.

The high standard of excellence deservedly and fully acknowledged by the reviewers of the first and second volumes of this work in the *Tropical Diseases Bulletin*, Vol 19 (pp. 259 and 532), is well maintained in the sections now under notice.

J. J. Pratt.

PEKING. **Addresses and Papers, Dedication Ceremonies and Medical Conference, Peking Union Medical College, September 15–22, 1921.**—pp. xiv + 416. With various illustrations. 1922. Peking, China.

Something has already been said in this *Bulletin* (Vol. 18, p. 146) of the new Union Medical College of Peking; the present volume records the formal inauguration and dedication of the College.

It is to be understood that, like the tree Igdrasil, the College is new not in its root but in those substantial and umbrageous parts that give visible support and comfort to the present generation and settled hope for the future. Its root and its name go back to 1906, and its nameless radicle may be traced to 1861, when Dr. William LOCKHART, of the London Missionary Society, opened a dispensary for out-patients in Peking. All the outgrowth from LOCKHART's dispensary disappeared in the Boxer rising, and it was in 1906, when quiet had returned to Peking, that a replenished school of western medicine arose there from the united efforts of three British and three American Missionary Societies co-ordinated by Dr. Thomas COCHRANE of the L.M.S. This seminary, which received the significative name of Union Medical College, is now transformed, under the auspices of the Rockefeller Foundation, into the magnificent institution already described in these pages. The architectural features of the new college are Chinese, but its internal arrangements are after the latest western models; its educational scheme includes at one extreme the natural sciences preliminary and ancillary to the study of medicine, and at the other end the apparatus of what we call post-graduate instruction,

besides providing the optional humanities of Christendom ; its design is to become a centre of enlightenment, and, through its hospital, a centre of medical research for China. As Dr. E. H. HUME reminded the assembly at the dedication ceremony, its purpose is anticipated in the words of Peter PARKER (1834), who was associated with Thomas COLLEDGE (1827), first European pioneer of medicine in China, in founding the Canton Medical Missionary Society " to educate Chinese youths in Western Medicine and to advance general medical knowledge by the reflex benefits which will accrue from scientific discoveries in China." The Rockefeller Foundation has defrayed all the rich cost of the new buildings, and has undertaken to provide the funds necessary for the maintenance of the institution until its future is assured ; but of the thirteen trustees who constitute its board of management six are severally representative of each of the six missionary societies connected with the original college.

A. Alcock.

DESTEFANO (Francisco) & VACCAREZZA (Raúl F.). **Poradenitis Inguinal Subaguda.**—Reprinted from *La Semana Médica*. 1923. No. 6. 198 pp. With 14 figs.

This work opens with a brief consideration of the question of the identity of the diseases spoken of as Subacute Inguinal Periadenitis, Climatic Bubo, Subacute Inguinal Lymphogranulomatosis, Fourth Venereal Disease, etc. Next follows a rapid historical survey and a study of the etiology of the condition. The disease is confined very largely to the male sex, and the majority of cases occur between the ages of 20 and 30 years, with a slight preponderance in the latter half of this period. Though much more common in tropical and sub-tropical regions it is not confined to hot climates. The superficial group of glands is primarily affected and the portal of entry of the hypothetic causal organism is some small abrasion or herpetiform or papular erosion of the external genitals. A description of the pathological anatomy of the affected glands, naked-eye and microscopic, is next presented, with illustrative microphotographs. The clinical aspect is fully dealt with, the general and local symptoms, the results of blood examinations, Wassermann reactions, and so forth. In three cases out of 23 tested the Wassermann reaction was positive " although there was no suspicion of syphilis." The diagnosis between it and other causes of glandular enlargement is discussed, especially plague (Pestis minor), tuberculosis and syphilis ; no mention is made of lymphadenoma.

Various methods of treatment are spoken of, but none of them has proved satisfactory except extirpation.

The last part of the work consists of very detailed accounts of twelve cases and a concluding summary of the subject. We note in this that the authors state that " clinically the disease is characterized by a tendency to suppuration in successive foci." This has certainly not been the experience of the reviewer ; it is true that foci of softening occur, but, when incised in expectation of finding pus, in the majority of cases none is evacuated. In those recorded in detail in this book—twelve in all—pus is mentioned in half only and in some of these the quantity was very small : " minute foci " in one, " one cc." in another ; in only one instance was there 5 cc.

The work shows evidence of prolonged and careful investigation.

H. Harold Scott.

PHISALIX (Marie). **Alphonse Laveran : Sa vie, son oeuvre.**—268 pp. With 30 figs. and 3 plates. 1923. Paris : Masson et Cie, Libraires de l'Académie de Médecine, 120, Boulevard Saint-Germain (6*e*).

Alphonse LAVERAN was born in 1845 into a goodly medical heritage, his father, who himself was the son of a physician, being a much-distinguished military medical officer. At the age of 22 Alphonse followed his

father into the army, and after serving in the disastrous war of 1870, and then for five years as assistant professor of military medicine at Val de Grâce, he was sent, in 1879, to Algeria, where in a year he made that discovery of the living malaria parasites which has placed him among the immortals of our profession. From 1884 to 1894 he was back at Val de Grâce as professor of military hygiene; and in 1896, "*incuriosus si quis alius famae*" in respect of public office, he retired from the service and betook himself to the Pasteur Institute of Paris to study, undistracted, the living foundations of pathology. There he worked long hours every day; and when, in 1907, as a recognition of his great discovery, he received a Nobel prize, he immediately gave it all away to establish a laboratory of tropical medicine, where he continued to work for the rest of his life.

Madame Phisalix gives us, besides these interesting particulars of LAVERAN's life, a very full account of his varied and extensive contributions to medicine and allied branches of science; his life was, as she says, a long laborious cult of knowledge—an austere and sustained devotion, interrupted only by the fell sergeant Death.

Some define genius as an infinite capacity for taking pains; some as the instinct for seeing aright what lies straight in front of the eyes; some as the inward spur that impels the clear spirit above the lure of earthly guerdons: by these tests LAVERAN is abundantly justified.

A. Alcock.

PEARSON (A.) & MOUCHET (R.). **The Practical Hygiene of Native Compounds in Tropical Africa, being Notes from the Experience of the First Eighteen Years of European Work in the Katanga.**—pp. xiv + 188. With 44 plates. 1923. London: Baillière, Tindall & Cox. [Price 22*s.* 6*d.* net.]

This book will be noticed in Sanitation Supplement No. 2, to be issued in July. The reviewer writes that Doctors Pearson and Mouchet, as the result of many years' experience, have produced one of the few books of real practical value to medical men who have the care of native labourers in Tropical Africa.

Dr. Pearson most unfortunately lost his life on March 27 in assisting his native boy, who was gassed in a mealie pit.